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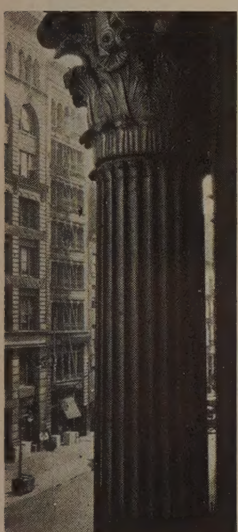
Colonnade Row (La Grange Terrace)

1836–1923

430–432 Lafayette Street, New York

By James Gambaro

NINETY years ago the city fathers decided to open a street through Vauxhall Gardens, "two miles out of town," which was to be called Lafayette Place (now Street) in honor of the Revolutionary Marquis, "whose recent visit to America had nearly turned the American head." This new street was to be a place of residence for those who desired to leave the thickly settled city and enjoy the pleasure of the country.



Some ten years later (1836), after the opening of Lafayette Place, one Seth Geer, a builder and designer, erected on the west side of Lafayette Street, a few doors south of Astor Place, a row of city dwellings under one roof on the site which now faces the old Astor Library. This row of houses was named "La Grange Terrace," after the country-seat of General Lafayette.

Colonnade Row in its original state consisted of a united terrace of eight houses under a long pointed slate roof (one-quarter of this roof still remains and is in good condition) with massive stone chimneys rising between each party wall to take flues from abutting houses. While the houses were built on the same general plan, there were varied details in the interior arrangement which reflect the ideas of those whose homes they were. The services were in the basement, and the great kitchens, storerooms, and servants' dining-rooms all bear testimony to the comfort of antebellum days.

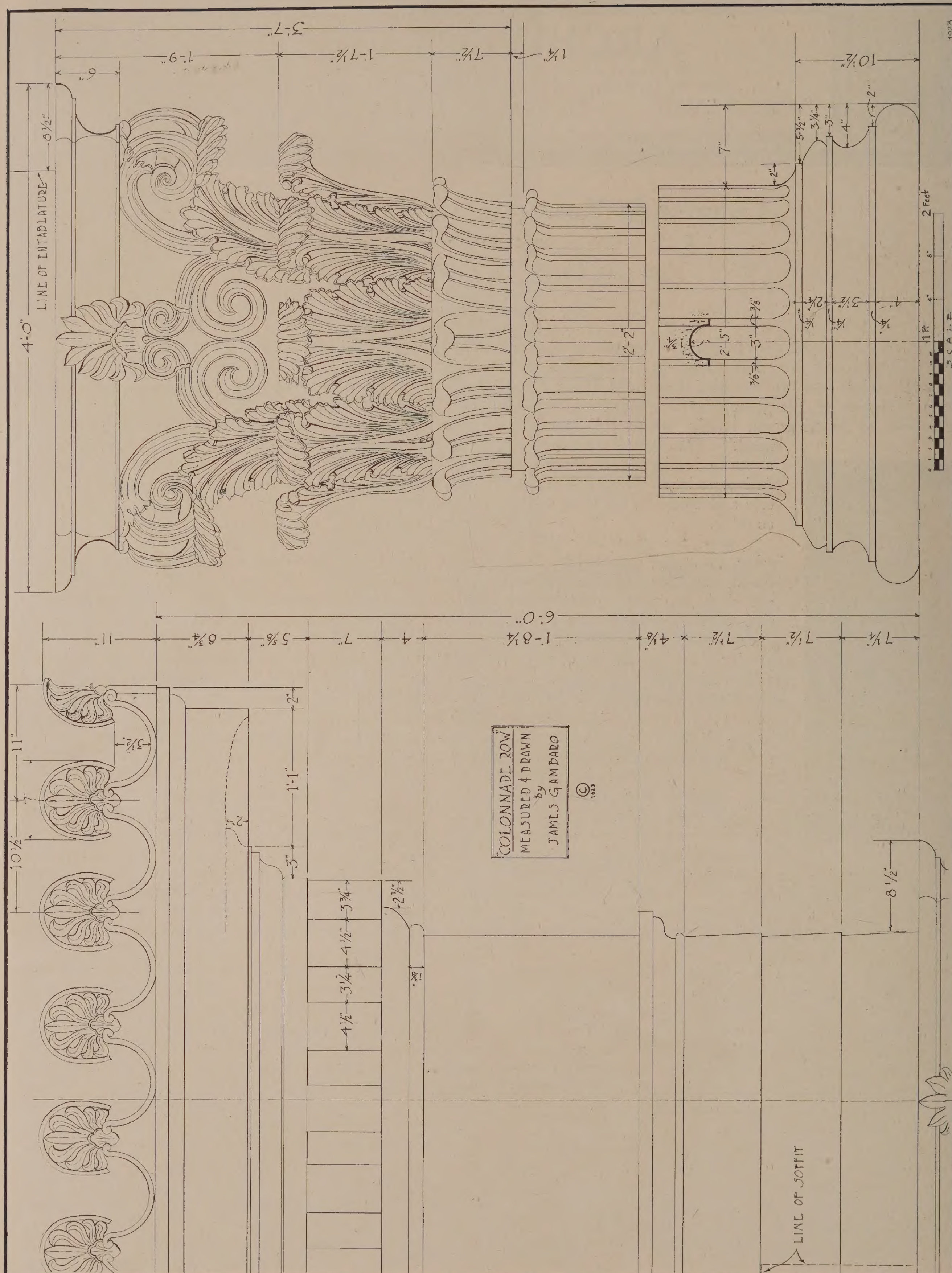
The original approach to each entrance consisted of an iron-railed parterre enclosing an area to the basement, while the main entrance doors were approached over a massive slab of stone flanked by stone balustrades. These balustrades terminated with panelled stone pedestals supporting a cast-iron candelabrum.

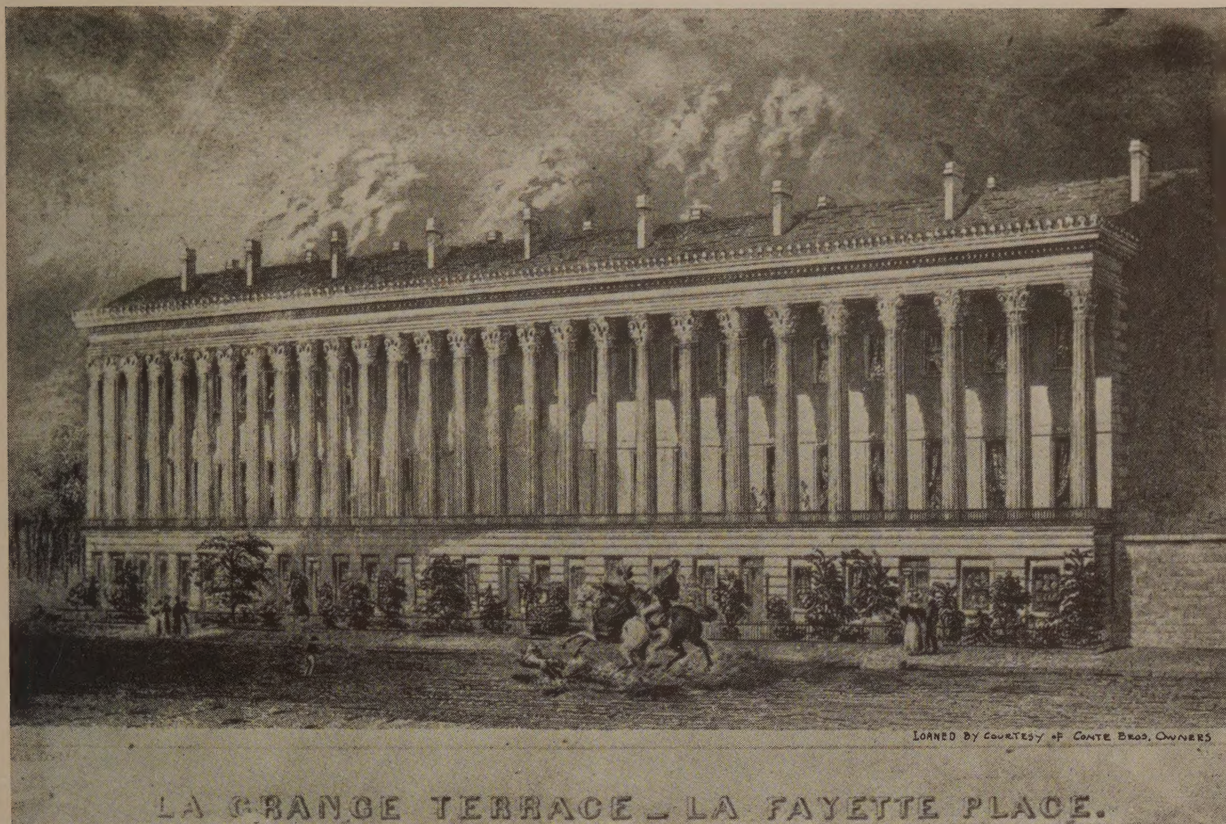
The door is low in proportion; the entire lower story forming little more than a base to the colonnade proper above. It is appropriately low and heavy, with channel rustication and deep-set windows (17 inches). There were no projecting porticos, as the Doric columns which were on each side of the door were set in, and their entablature did not project beyond the face of the building line.

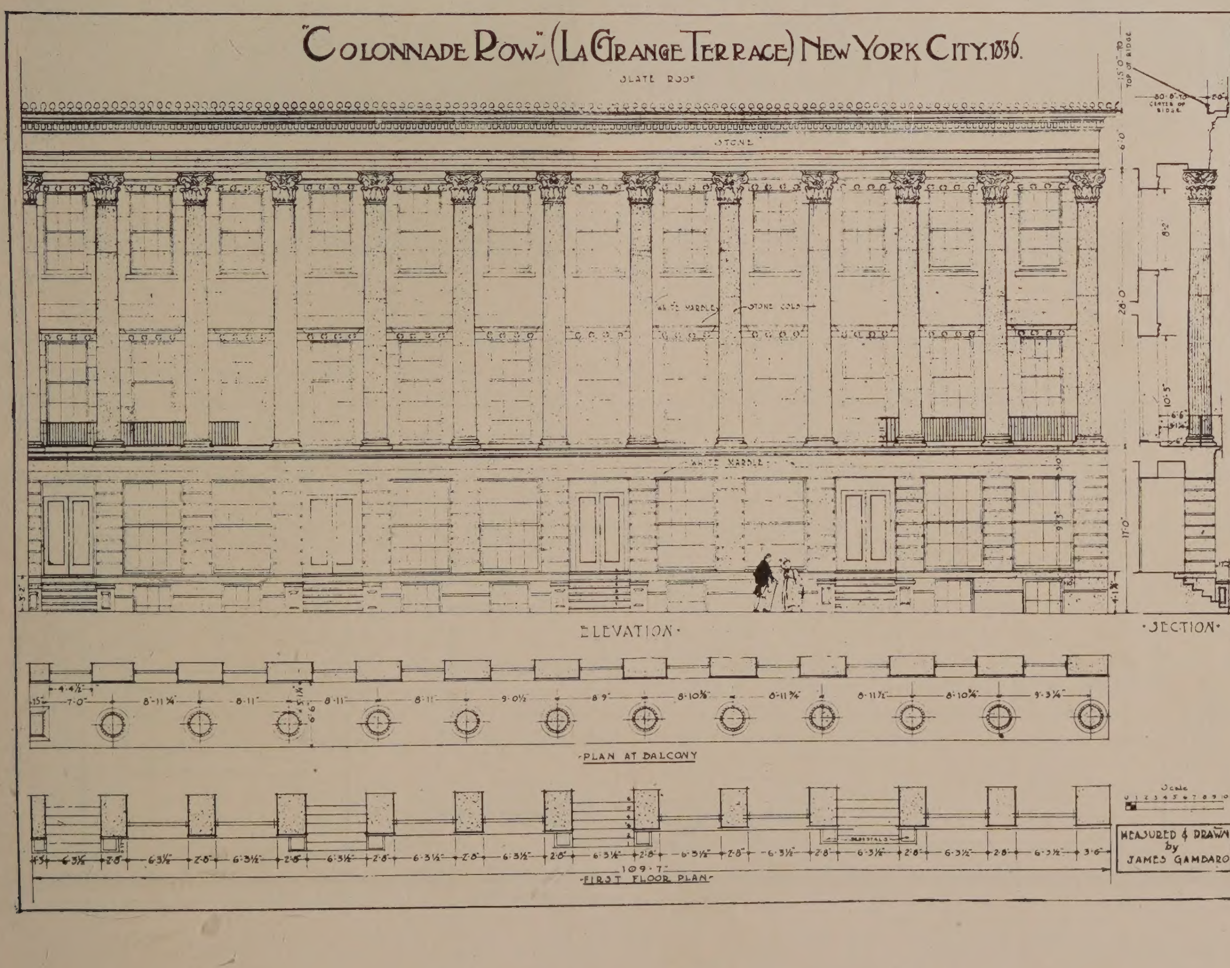
Upon the base thus proportioned and designed rests the lofty Corinthian colonnade rising clear to the main cornice. Their dignity and stateliness form a pleasing contrast with the surrounding buildings. The shafts of the columns are built up of five drums, and although some architects claim that the capitals are exact replicas of the Corinthian motive in the choragic monument of Lysicrates in Athens, that is not true, as the accompanying photographs and details will show. The base (with the exception that the plinth is omitted) and the entablature are a copy of the above-mentioned monument. The proportions are the same with exception of the height of the columns, which are 12 diameters as compared with the Lysicrates 10. The spacing of the columns averages about $7\frac{1}{2}$ diameters. The increase in height of the columns reflects the influence of the slender proportions usually adopted for wood architecture of the period. The residential character of the building also calls for a more graceful proportion than would be adopted for a monument.

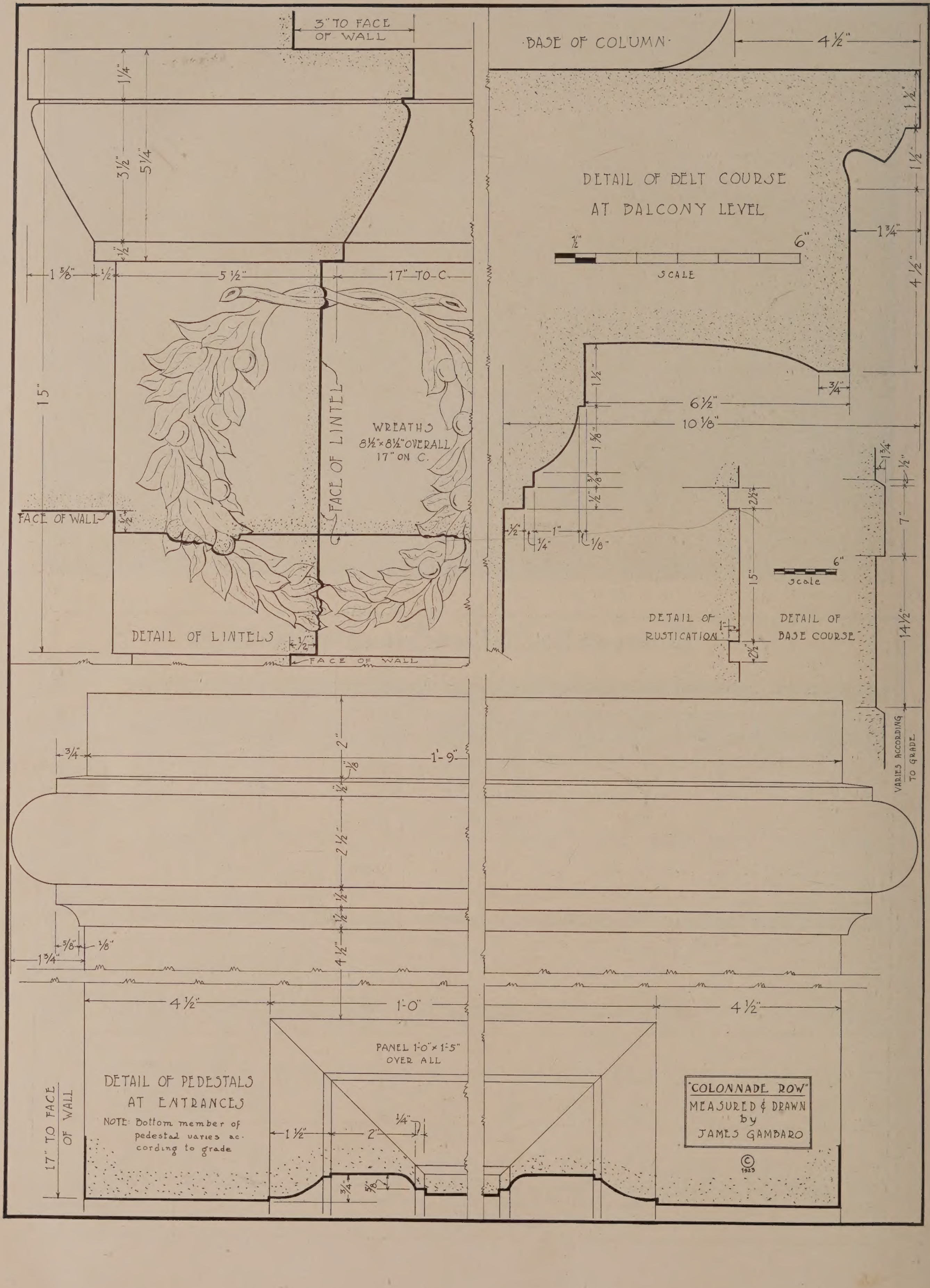
The cornice is of stone, well bonded into the brick walls of the building, and crowned with antefixes spaced about $10\frac{1}{2}$ inches on centres. The fenestration is simple. The tall windows suggest the high-studded rooms of the principal floor, and their alignment is carried by a continuation of their architrave moulding in the form of a delicate string-course, while each window is embellished above by four wreaths. The second-story windows, to distinguish them from the more important windows below, do not carry the architrave in the form of a string-course, but return above each opening, though the architrave is decorated as below with the wreaths. An iron rail of Greek design formerly ran across the front of the columns; this was removed some time ago, and replaced by a simple wrought-iron rail, placed between the columns.

The ravages of time and the destructive hand of commercialism have had their effects, however. The marble is disintegrating very rapidly, and portions have been covered with a plaster coat of cement, applied without any regard for the original motives. Only four of the original eight houses remain, the others having been removed to make way for a garage and stable. A restaurant occupies one-half of the remaining portion, emphasized by painting that portion of the lower story white and cluttering the front with signs and "modern" candelabra. All of the entrance-door motives have been cut away to make place for various-sized windows and doorways. The windows on the upper floors have also suffered, for the original Colonial sash have been replaced by "French" casements, without regard to scale or design, leaving only the stately columns of rapidly deteriorating limestone to bespeak an early masterpiece of American architecture.

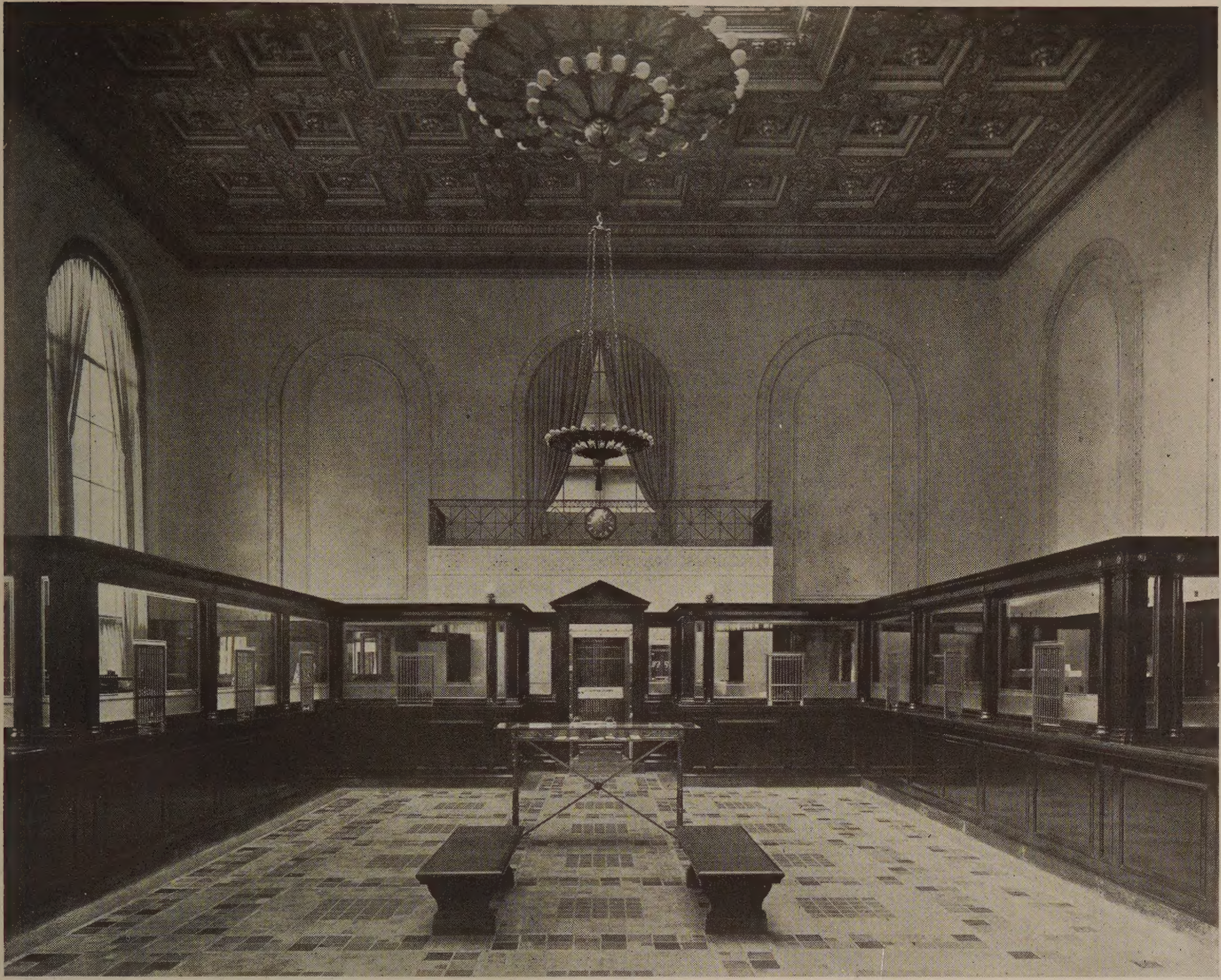

COLONNADE ROW
MEASURED & DRAWN
by
JAMES GAMBARO
© 1923
LINE OF ENTABLATURE
LINE OF SOFFIT
SCALE
1923


LOANED BY COURTESY OF CONTE BROS, OWNERS
LA GRANGE TERRACE _ LA FAYETTE PLACE.


"COLONNADE ROW" (LA GRANGE TERRACE) NEW YORK CITY. 1836.
SLATE ROOF
STONE
WHITE MARBLE
ELEVATION.
SECTION.
PLAN AT BALCONY
FIRST FLOOR PLAN
109'-7"
MEASURED & DRAWN by JAMES GAMBARO



3" TO FACE OF WALL
BASE OF COLUMN
DETAIL OF BELT COURSE AT BALCONY LEVEL
SCALE
WREATHS 8½"×8½" OVERALL 17" ON C.
FACE OF LINTEL
17" TO C.
FACE OF WALL
DETAIL OF LINTELS
FACE OF WALL
DETAIL OF RUSTICATION
DETAIL OF BASE COURSE
scale
VARIES ACCORDING TO GRADE
PANEL 1'-0"×1'-5" OVER ALL
DETAIL OF PEDESTALS AT ENTRANCES
NOTE: Bottom member of pedestal varies according to grade
17" TO FACE OF WALL
"COLONNADE ROW" MEASURED & DRAWN by JAMES GAMBARO
© 1923



Banking Room, National Manufacturers Bank, Neenah, Wis. Childs & Smith, Architects.

The National Manufacturers Bank, Neenah, Wis.

WHAT a good opportunity the architects had in the architecture of the two Neenah banks is shown in the illustrations. These banks, on opposite corners, line up like two guards of financial security along "Main Street." Each one reinforces the effect of the other, and both together tend to fix the centre of the town!

The First National Bank, to the right, was completed three years ago. When, two years afterward, the new National Manufacturers Bank building was contemplated, suggestion was made to the new committee that the main horizontal lines of the First National Bank, the base, the cornice, and the parapet, be carried through in the exterior of the new bank, and that the same material, Bedford stone, be adopted. The committee quickly realized the architectural advantage to the town, to the other bank, as well as to their own, and acquiesced.

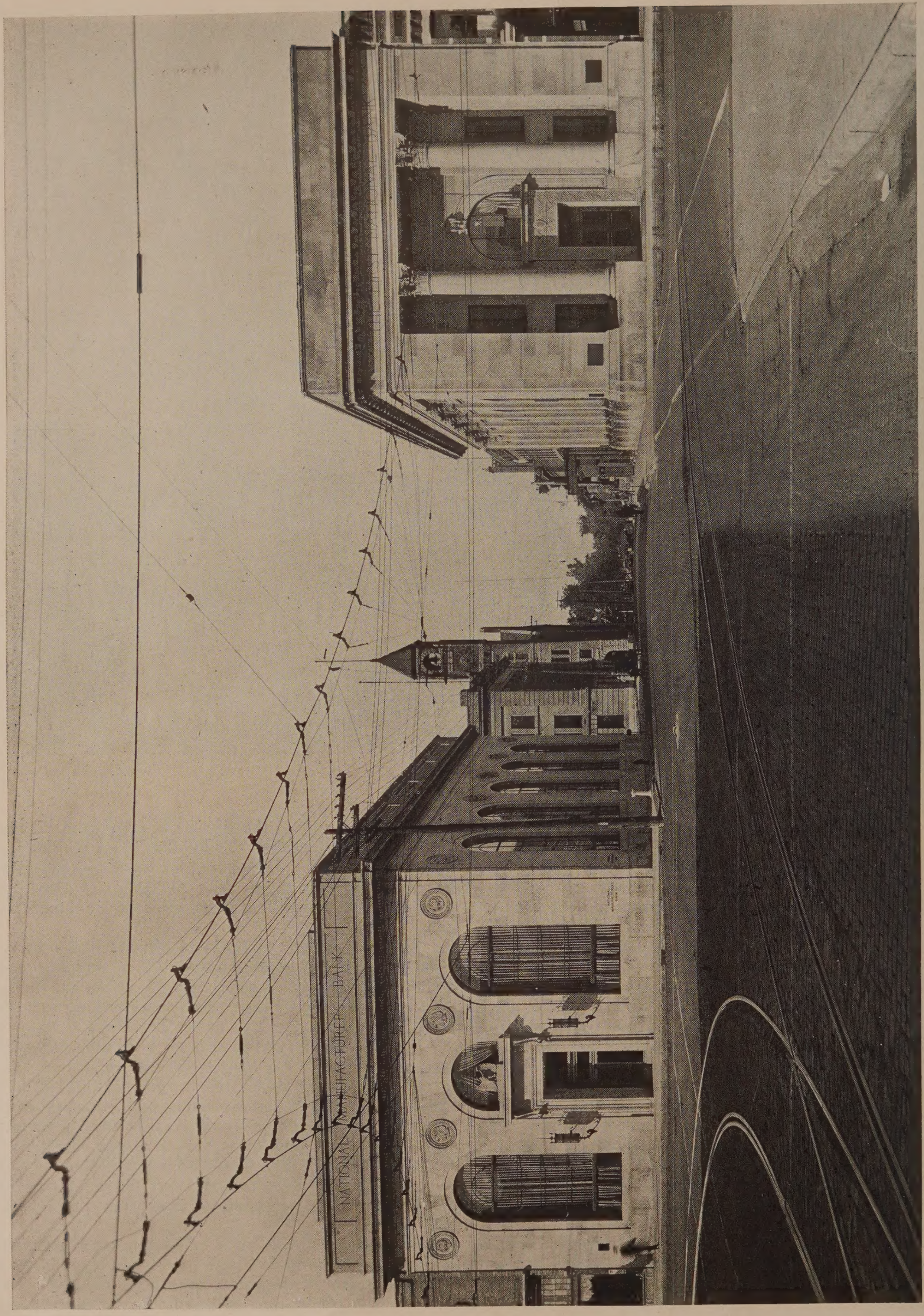
While on the exterior, for the above good reasons, the two banks have many points in common, they are very dissimilar in the interior.

Interiorly the First National Bank is a "marble bank," simple, dignified, and ivory in tone. The National Manufacturers Bank, on the other hand, is full of color. It has "cathedral" tile floors; walnut-faced cage counters and cage screens; walnut wainscoting around the walls; bronzed plaster reveals around the circular windows; neutral tinted walls and a warm colored ceiling of old blues, old golds, and magentas—a ceiling reminiscent of warm colored Italian Renaissance ceiling types. The skylight is of amber glass decorated with a moulded leaded grille work of bronze character.

In the interior, the National Manufacturers Bank of Neenah is a rare example of a Middle Western bank, having a truly hospitable atmosphere, colorful, warm, and inviting. This is a bank requirement which recently has more often been demanded in the East or the Far West.

The tile floor in particular is an innovation. The large square patterns, in the manner of the well-known Dutch marble floors, keep intact the ornamental quality of the bank. These patterns are mosaicked with brilliantly colored tiles which awaken interest in the mass but which separately take their places and blend well into the large neutral colors of the field. Tile should be as applicable as marble to bank floors. Perhaps with this example as a leader there will be many more cathedral tile floor banks in the coming years.

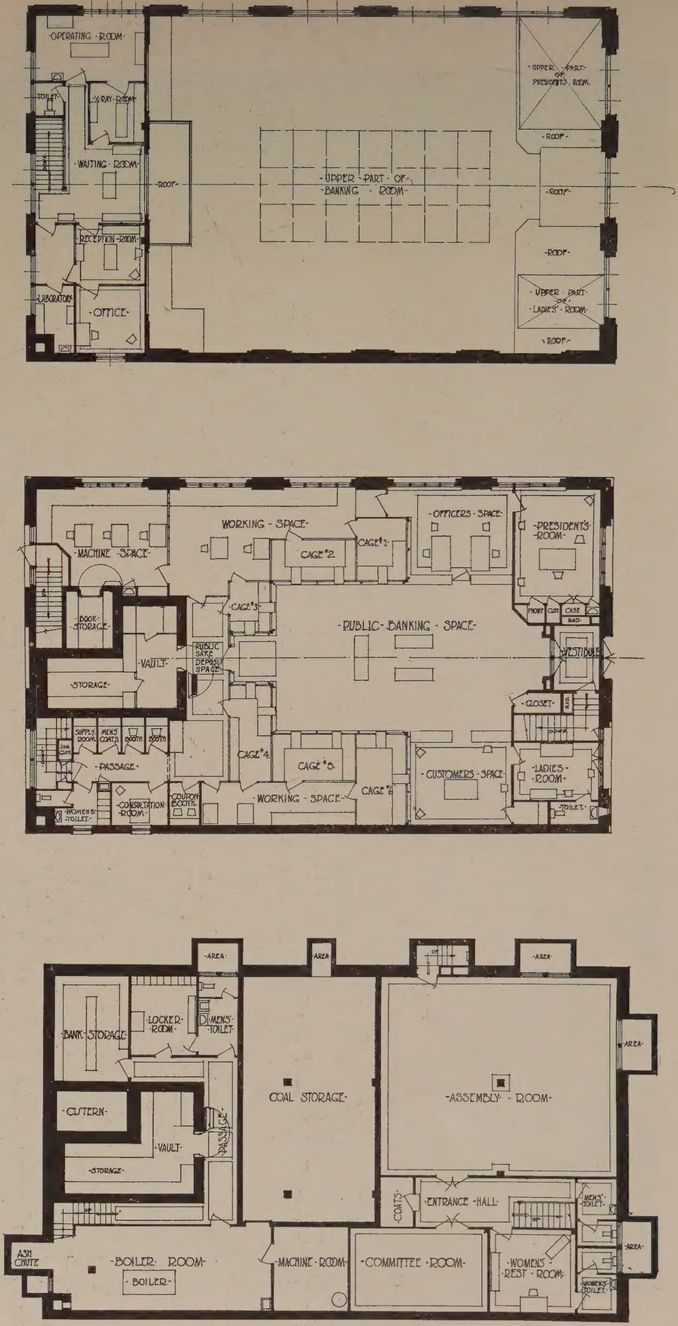
Some may call this bank building another experiment in the "new home bank" type. Certainly it is different—it is an endeavor of the architects to avoid the usual "bank mausoleum." Only time will show how well they have succeeded.



NATIONAL MANUFACTURERS BANK AND FIRST NATIONAL BANK, NEENAH, WIS.

Childs & Smith, Architects.

ENTRANCE DETAIL.



PLANS.

Childs & Smith, Architects.

NATIONAL MANUFACTURERS BANK, NEENAH, WIS.

Swedish Architects Working Out a National Style

THE International Town Planning Conference and Exhibition held in connection with the Gothenburg Jubilee Exposition, July 27 to August 12, served to focus attention upon the recent and interesting developments in Swedish architecture. The city of Gothenburg, which celebrated its three hundredth anniversary with the exposition, is one of north Europe's earliest examples of city planning. The city was laid out from the very start by Dutch architects brought in for the purpose by the Swedish hero-king, Gustavus Adolphus. The planning idea has been fairly constant in Gothenburg since that time. The present city architect and engineer, Mr. Albert Lilienberg, is one of the leaders of the movement in Europe, and has represented Sweden in many international conferences.

The characteristics of present day Swedish architecture are a compound of functionalism and of a regard for historical precedent. Swedish architects are striving for new solutions of present-day problems, and they emphasize, also, continuity with the tradition of Swedish building. The country has had a wide range of architectural influences. Romanesque came in with Christianity and is found in the country's earliest ecclesiastical monuments. Byzantine comes in directly, carried by Swedish traders with the East, and it filters through Russia, particularly at times when Russian prisoners of war were engaged in construction work in Sweden, at such a place, for instance, as St. Maria's at Visby. Swedish Gothic exhibits influences from Germany, England, and the Île de France, while Renaissance architecture shows strongly in the Swedish capital, as does also baroque. To the architect of the remarkably fine Swedish royal palace, Tessin the younger, who enjoyed great influence in Sweden, and to Gian Lorenzo Bernini, the country owes a large heritage of post-Renaissance style. It has taken the nobler side of baroque, freedom in handling traditional forms, the creation of new forms of plan and space rather than the elaboration of detail and ornament, attracting with ever varying perspectives and changing silhouettes and diagonals, attained by curves and projections in plan and elevation.

These historical influences, tempered by northern severity and the search for a national style, are seen in the buildings of the Gothenburg Exposition. Here the emphasis is on structure and function, and the architectural interest depends to a large extent on the expression of these elements. However, in such structures as the Memorial Hall, the Hall of Sports, and others, an intelligent and suggestive use of the orders gives a classic effect. This has led many writers on the exposition to call its architecture classical, an observation very far from the truth.

Simple ornamentation, accentuating in every case the structural elements, is characteristic of the whole exposition. The interest depends largely on the play of lines and masses. From every angle of vision the flow and interplay of volumes and spaces is full of interest. There is none of the dull and obvious balance of masses which one finds in so much exposition architecture. From one view the structures build up in a climax of eagerly aspiring verticals, from another there are variations on a horizontal theme in a diversity of trabeated constructions, from yet another a rich succession of vaults and domes. Slight variations from exact symmetry here and there give life and movement to the arches, while gardens and lines of trees repeat the forms and colors of the buildings, flower beds repeating wall colors and lines of façades. The irregular contour of the site, which is a hillside, makes the buildings rise in an ascending series of masses, here and there giving the effect of a modern French painting of hillside towns. One of the exposition architects, Mr. Arvid Bjerke, is authority for the statement that modern painting was the inspiration for the original plan of the buildings. If that is so then painting is beginning to pay back to architecture the heavy debt which it incurred through Giotto, who carried over into painting many things which he had learned as an architect, and whose work has had a profound influence on all Occidental painting since his time.

In the building of offices and dwelling houses, particularly country homes, Swedish architects have achieved good things. The houses here shown are by two of Sweden's leading architects, Ivar Tengbom and Carl Westman. The best known work of Tengbom is the beautiful Enskilda Bank in Stockholm, a building of limestone, black granite, and marble, distinguished by solid simplicity, good taste, and expressive character. Tengbom is especially noted for his interesting use of materials.

In Sweden, as in central Europe, the influence of the architect in the applied arts movement has been very great.

Building materials such as wood, especially the wood of coniferous trees, limestone, granite, brick, and cement are plentiful in Sweden, so one finds the greatest latitude in the use of materials. Wood is a favorite and is everywhere used in cheaper houses, particularly workmen's homes, and is handled with good effect in such places as the garden suburb of Landala, near Gothenburg, designed by Gothenburg's city architect, Mr. Albert Lilienberg.

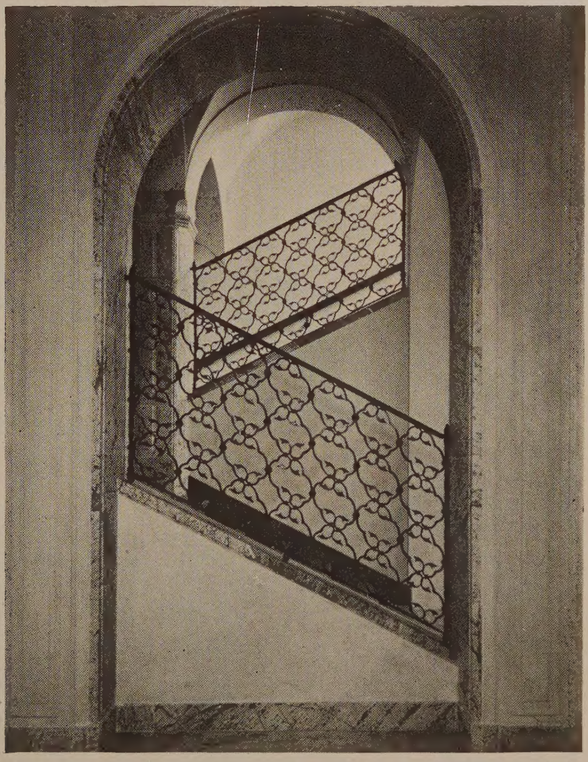
In the homes of the well-to-do brick, cut stone, black granite, concrete, stucco, and sometimes marble, are used. Brick is used with great freedom in design, color, size, and finish, and varying widths of the mortar joints. In the Stockholm Town Hall brick is handled with fine artistic effect.

There is considerable homogeneity in the ideals of Swedish architects, though there are, of course, great individual variations in practice. All are striving for the solutions of the country's architectural problems within the limits set by the necessities and possibilities of the present day, tempered by the solutions which the past has offered. These architects are men of importance in the life of the community, and their names are as well known to the general public as are those of the painters and sculptors. Their advice is sought in all town planning schemes, movements for improving the standards of design and production in industrial art, and in all movements for the betterment of the community and the country in general, where design and plan are necessary. This phase of their activity might be described in the words of the English architect Lethaby, as "architecture as form in civilization." It is a broad and splendid application of the profession and art of architecture to the problems of the national life. But to follow it further in the Swedish state would far outrun our space.

RESIDENCE, STOCKHOLM, SWEDEN (1920). Ivar Tengbom, Architect.

RESIDENCE, STOCKHOLM, SWEDEN (1920).
Carl Westman, Architect.

The natural rock of the neighborhood is laid in patterns in the garden walk, with grass growing in the joints.



STAIRWAY, RESIDENCE, STOCKHOLM, SWEDEN (1920).
Ivar Tengbom, Architect.

The ironwork is a typical product of modern Swedish work, based on traditional designs of the old Swedish smiths.

BRICK RESIDENCE, STOCKHOLM, SWEDEN (1920). Ivar Tengbom, Architect.
Wall surfaces and roof suggestive of Vasa architecture, with post-Renaissance influences.

RESIDENCE, STOCKHOLM, SWEDEN (1918). Ivar Tengbom, Architect.
Finished in stucco. Natural neighborhood rock used in gate posts and foundations.

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Editorial and Other Comment

From the Ruins

"Oh, East is East, and West is West,
And never the twain shall meet,
Till Earth and Sky stand presently
At God's great Judgment Seat;

But there is neither East nor West,
Nor Breed nor Birth,
When two strong men stand face to face,
Though they come from the ends of the earth!"

ABOVE everything else our sympathies go out to the Japanese people in this time of trouble, disaster, and suffering. The American people have responded with their usual generosity in times of great need, and the old cities of Japan will rise again from the ruins.

In the rebuilding, the great lesson of the present will be the fact of the value of modern steel and concrete construction. The headlines in a leading newspaper read, "Skyscrapers Withstood the Shocks," and messages received by the London and New York agents of Japanese companies state that Tokio's "skyscraper" district escaped destruction. It is known as Marunouchi and is located between the Central Railway station and the Imperial Palace and consists of great blocks of reinforced concrete buildings, which were at first reported to be a mass of ruins. They withstood the shock, and the extensive station plaza saved them from the flames.

The George A. Fuller Company has received assuring reports from its Japanese representatives.

On other pages of this number appear some extracts from an article written by W. A. Starrett of Starrett Bros., who has but recently returned from Japan and who was in charge of the construction of some of the new modern buildings that have stood the test of earthquake and fire. It is a most timely and instructive contribution, and we feel sure that the readers of ARCHITECTURE will be interested in the statements of such a well known and capable member of the profession.

There will arise a new Japan from the ruins of the old, and American constructive methods and American architects and engineers will be called upon to do their full part. And we venture the prediction that in the rebuilding Japan will develop into a more formidable and modernized business competitor with the rest of the world. We have all wondered what would happen to our own tall steel structures in an earthquake, though we had practical demonstration in the San Francisco disaster.

The walls may fall, the surface that hides the immense steel cages drop, but the essential structures remain intact.

We Need More of Them

OLD ways are good enough until someone comes along and shows us that new ways are not only much better but often much more profitable. We published in the September number some of the new garden apartments that have been built at Jackson Heights, Queens, Long Island. These have attracted wide attention in many ways, and from a purely business viewpoint they have demonstrated that creature comforts and beauty may go together and lose nothing in the partnership.

Air and light are prime essentials wherever people live, and air and light and space to move about in in the open air, are the things that make this development worthy of high praise and, what is more to the purpose, sought by many looking for a comfortable place to live in.

The Garden Village is a familiar sight in England; some of the great industrial centres over there are celebrated for their charm and perfect sanitary conditions.

All about as well as in our big cities there are spaces that might be used for building garden apartments. The first of this type, built at Jackson Heights, was designed by Andrew J. Thomas in 1919. A space of fifteen feet was left between the buildings.

"Progress in the further development of the garden and the separation of the buildings has characterized succeeding types. The minimum distance between structures in new designs is 36 feet, and only 38 per cent of the area is covered. At the same time important progress has been made in numerous other matters. Sunlight and air have characterized all the apartments, and all have been built of durable materials. But during the last three years the types have evolved from partial fireproof to entirely fireproof buildings, from flat roofs to mansard and Italian, from walk-up to elevator, from an architectural standard which permitted certain awkward combinations of service and court entrance facilities to a standard completely separating the two, from a general appearance which still preserved the severity of the city block to one which brought apartments into a structure as artistic and graceful as a large country house.

"Along with the architectural and hygienic progress represented in such improvements has gone the growth of community advantages. The selling corporation guaranteed from the beginning a perpetual lease on terms, janitor and garden service, heat, etc. It created an organization to sublet apartments and resell when occupants desired to withdraw. But in addition it has proceeded, in conjunction with the tenant-owners, to create certain community advantages."

"Art and the Skyscraper"

THIS is the title of an article by DeWitt C. Pond in the "Field of Art" of the October *Scribner's*, and we hope that it will be read by many laymen as well as architects. Our architecture is taken for granted by the average man in the street, and only now and then, when some one with a practical knowledge of the subject combined with vision points it out, is he aware that building and beauty may go hand in hand.

Mr. Pond writes with special knowledge and with due reserve; he is not waving the flag or making any unwar-

ranted claims for American architecture. It is a thoughtful, well-considered discussion of things with which we are all concerned.

The following reply to a too common criticism seems to us timely and well put:

"The patronizing attitude of those who claim that buildings in which the use of steel makes possible new forms cannot be good expressions of the art of architecture shows a lack of understanding of what this art really is. A building must be useful, so its plan must be simple and direct. A building must also be beautiful, and so its parts must be well proportioned and designed to form an interesting composition. To accentuate and define the various parts, various ornamental motives are used, and because these motives are inspired by Old World patterns, the critics have been disposed to belittle the achievements of American designers. It is a cheap kind of criticism, for architecture is very much more than the derivation of ornamental motives. It is the same type of criticism that is voiced against the Romans, who planned with masterly skill, but who used Greek models as inspiration for their applied ornament."

A Matter of Business

THE Editor of ARCHITECTURE recently sent out a letter to a number of architects in all parts of the country with a view to finding out from those most concerned just what projects were in hand and what the new year promised.

The general opinion is most encouraging and we have reprinted the material in the form of a report, that we shall gladly send to anyone interested.

That there is an immense amount of building going on is evident on all sides, and that it promises to continue, even in increased measure, seems to be a safe prediction.

This is not mere "optimism" but opinion based on the actual conditions as observed by men of careful and experienced judgment on the job.

The New School of Fine Arts at New York University

BEGINNING this September, the oldest of university departments of fine arts in America begins a new and vigorous life. The first university instruction in fine arts given in America was inaugurated by New York University on its foundation, through the appointment to its faculty, in 1832, of Samuel F. B. Morse, then president of the National Academy of Design. In 1835 he was made professor of the literature of the arts of design, a title he held until his death, when it was allowed to lapse. Now, through the generous support of Colonel Michael Friedsam and the Altman Foundation, the chair has been re-established, and the scope of the department of fine arts has been greatly increased. Through the co-operation of the Art-in-Trades Club of New York City, which has done so much to raise the artistic standard in manufacture and trade, the work offered in the decorative arts will be specially important.

A strong faculty has been assembled under the direction of Fiske Kimball, formerly head of the School of Fine Arts at the University of Virginia, and author of many books and articles dealing with architecture and the other arts, who will hold the Morse professorship. The study of Italian art will be in charge of Doctor Richard Offner, who now returns after some ten years devoted to research in Italy, during which important articles from time to time have given promise of the monumental "History of Florentine Painting," on which he is engaged. Doctor R. M. Riefstahl, associated with the Anderson Galleries, and well known for his writings on textiles and on Mohammedan art, will lecture on historic textile fabrics, on tapestries, and on Oriental rugs; while Mr. William M. Odom, author of the great "History of Italian Furniture," and director of the New York School of Fine and Applied Art in Paris, will give the fruits of his long study there in a series of lectures on interiors and decoration in France. A course in the design of interiors and furniture will be under the general supervision of Mr. Francis Lenygon, equally well known for his books and for his work as a decorator, both in New York and in London, where his firm acts by appointment to His Majesty.

There will also be a number of special lecturers, headed by Edwin H. Blashfield, president of the National Academy of Design, who will inaugurate a series of Morse lectures. His addresses, which will take the form of reminiscences, extending from a meeting with Morse in Paris, in student days, will be given in the auditorium at Washington Square, on the site of the old university building, where Morse had his studio, in which, despairing of public appreciation of painting, he constructed his first telegraph.

Through an agreement recently ratified, the old relation between New York University and the National Academy of Design has been restored and extended. The two institutions will offer a combined course for art students who wish also to secure a liberal college education. This will involve a college course of four years, of which the first three will be spent in the study of academic subjects in one of the colleges of the university, and the fourth year will be devoted exclusively to the study of drawing and painting at the academy. Students of the university will thus have the advantage of taking this work under such well known masters as Charles W. Hawthorne, Francis C. Jones, Charles C. Curran, and others, under whom they may pursue further study of painting at the academy after graduation.

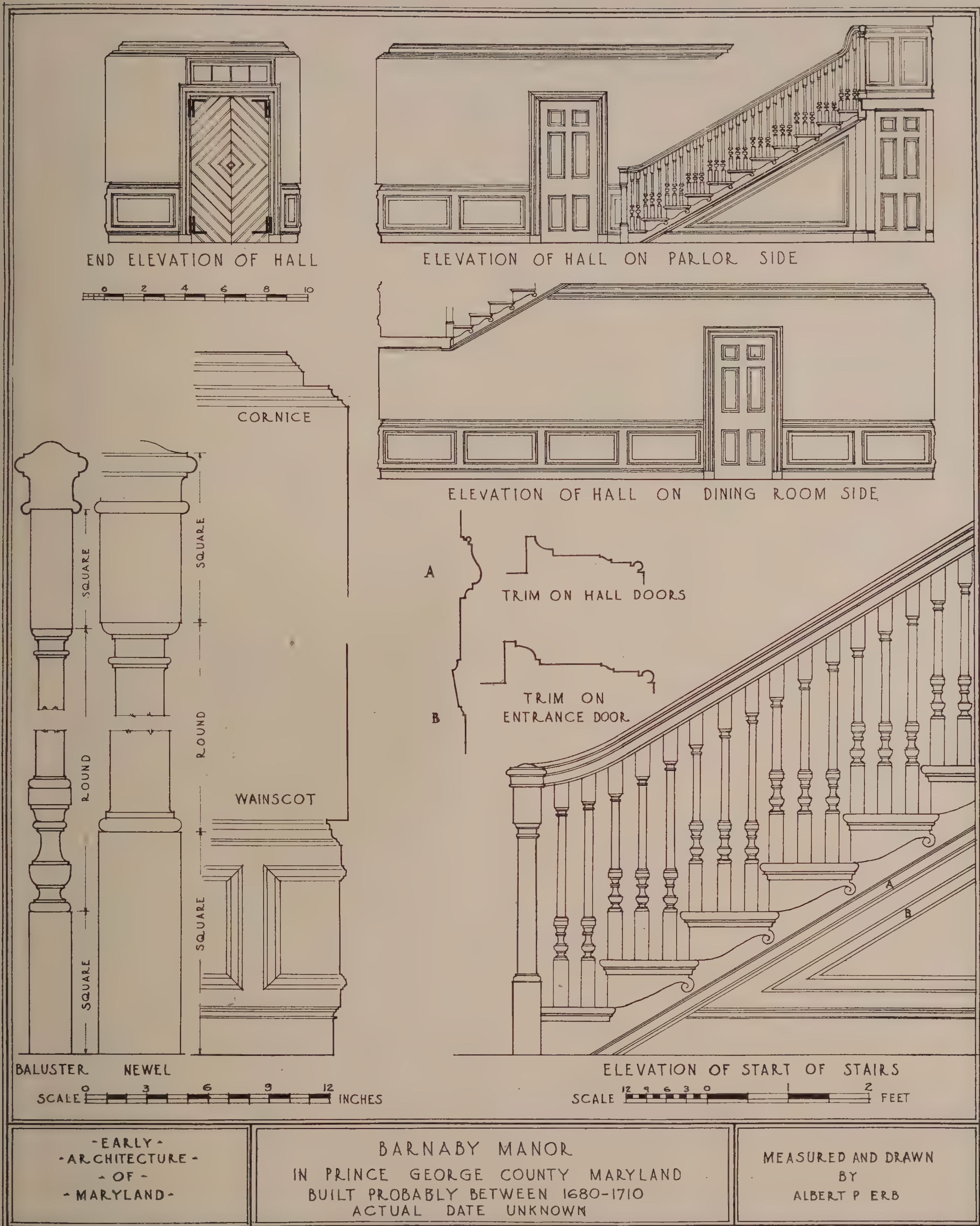
Among the general lecture courses, which will be opened not only to regular students of the university but to those engaged in professional or commercial work, as well as to collectors and other members of the public, will be, besides those already mentioned, courses in the history of architecture and other phases of painting and the decorative arts. Through the courtesy of the Metropolitan Museum a number of these will be given at the museum, while others will be given at Washington Square, as well as at University Heights. Many of them will be given in the evening, and most of them will be open to women as well as men.

It has seemed a great anomaly that in the city of New York, with all its valuable artistic sources, its public and private collections, and the display constantly in progress throughout the city of paintings, sculpture, and the decorative arts, there should not have been until now a university department of fine arts.

DETAIL, RESIDENCE, WM. S. JENNEY, EAST HAMPTON, LONG ISLAND. Polhemus & Coffin, Architects.

RESIDENCE, WM. S. JENNEY, EAST HAMPTON, LONG ISLAND.

Polhemus & Coffin, Architects.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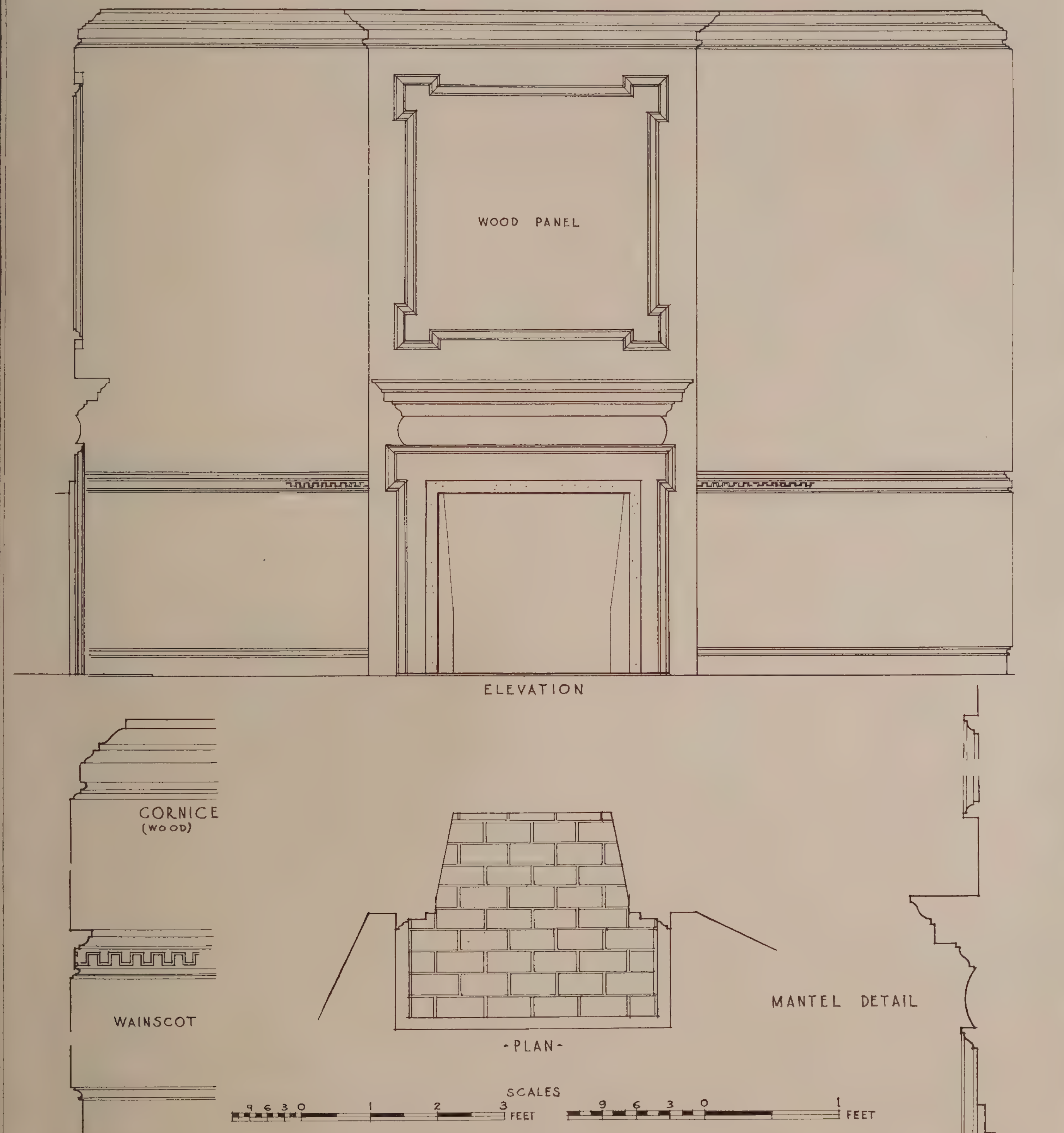

MANTEL AND PANELING IN LIBRARY (?)

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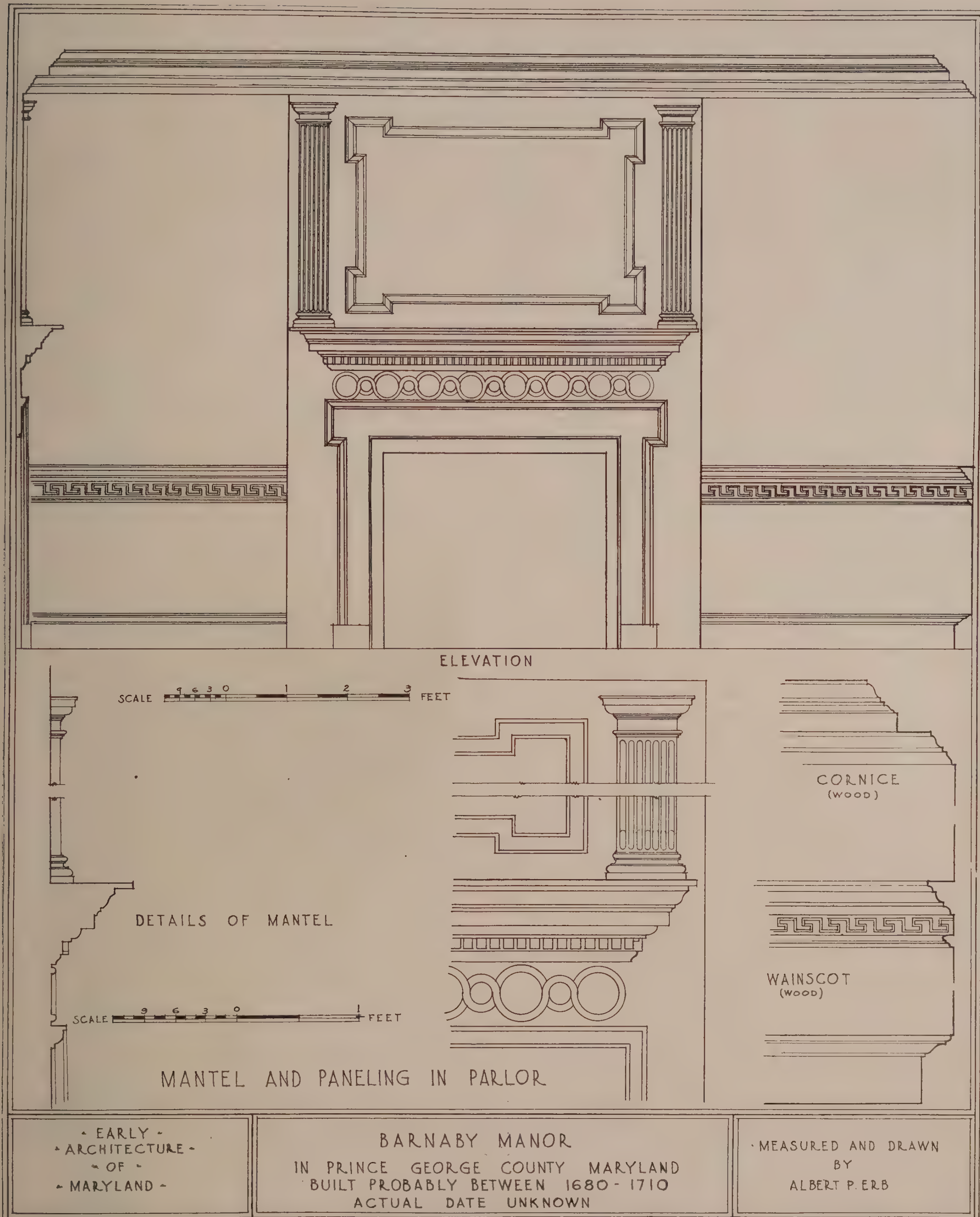
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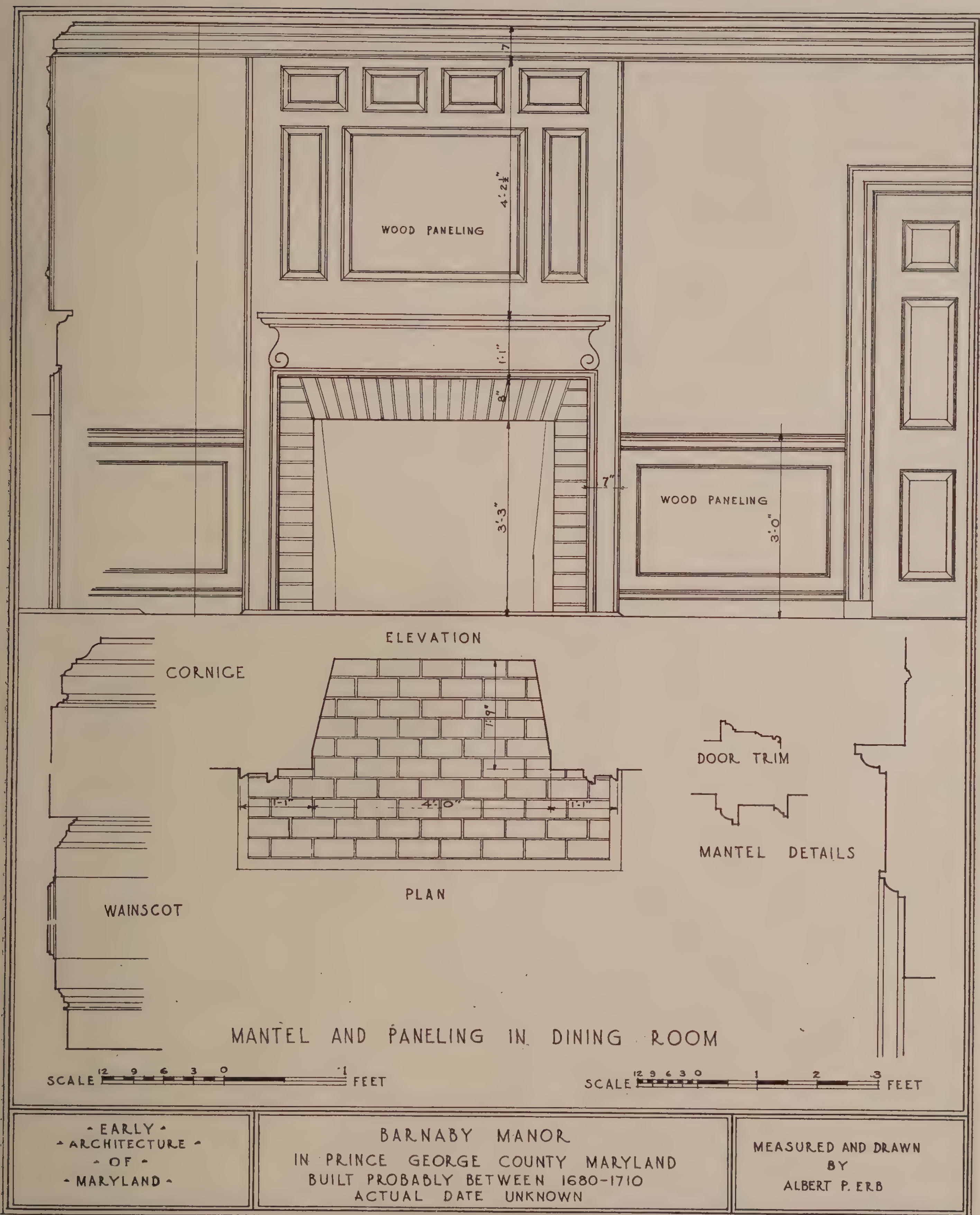
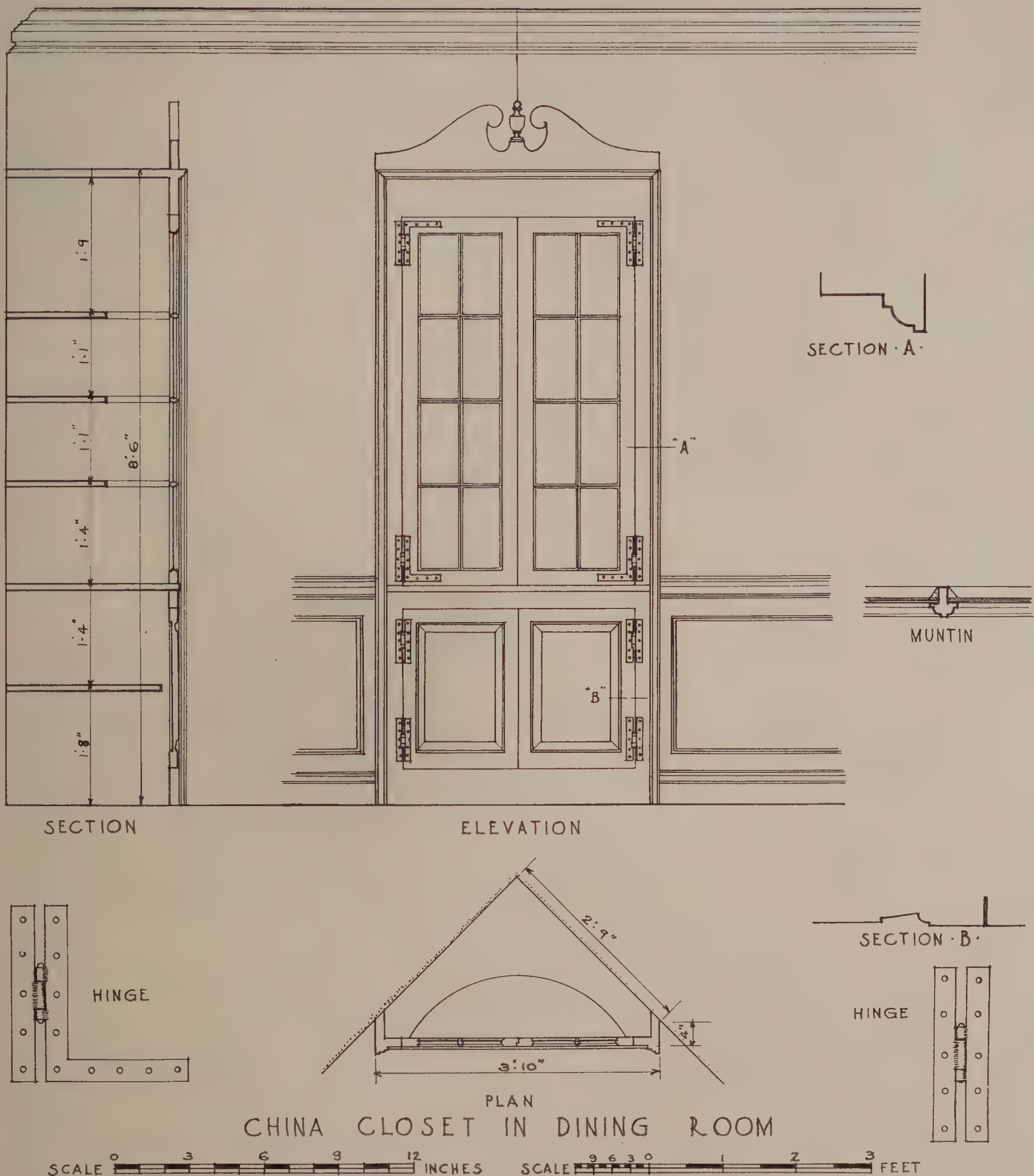


7"
4'-2½"
WOOD PANELING
1'-1"
8"
3'-3"
7"
WOOD PANELING
3'-0"
ELEVATION
CORNICE
1'-9"
1'-1"
4'-0"
1'-1"
DOOR TRIM
MANTEL DETAILS
PLAN
WAINSCOT
MANTEL AND PANELING IN DINING ROOM
SCALE 12 9 6 3 0 1 FEET
SCALE 12 9 6 3 0 1 2 3 FEET
· EARLY ·
· ARCHITECTURE ·
· OF ·
· MARYLAND ·
BARNABY MANOR
IN PRINCE GEORGE COUNTY MARYLAND
BUILT PROBABLY BETWEEN 1680-1710
ACTUAL DATE UNKNOWN
MEASURED AND DRAWN
BY
ALBERT P. ERB



CHINA CLOSET IN DINING ROOM

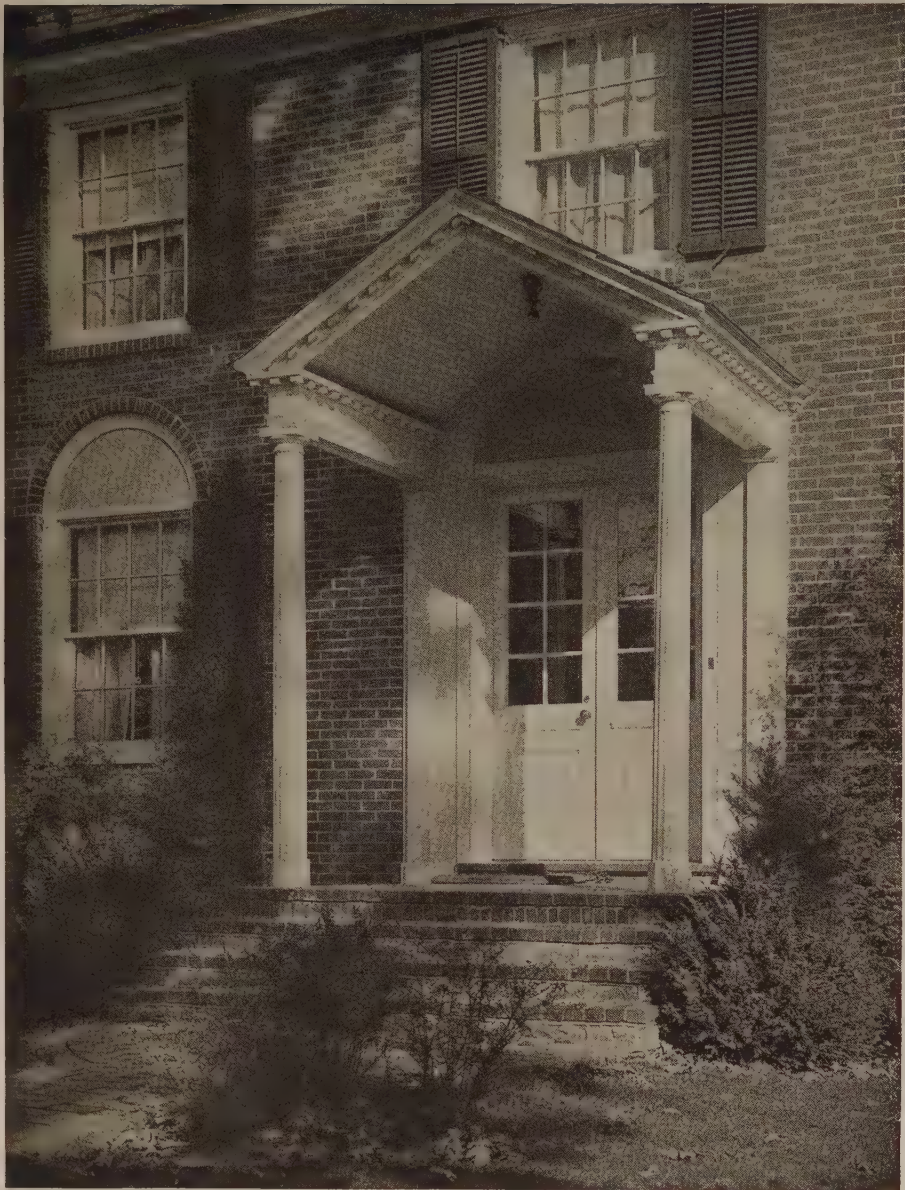
- EARLY -
- ARCHITECTURE -
- OF -
- MARYLAND -

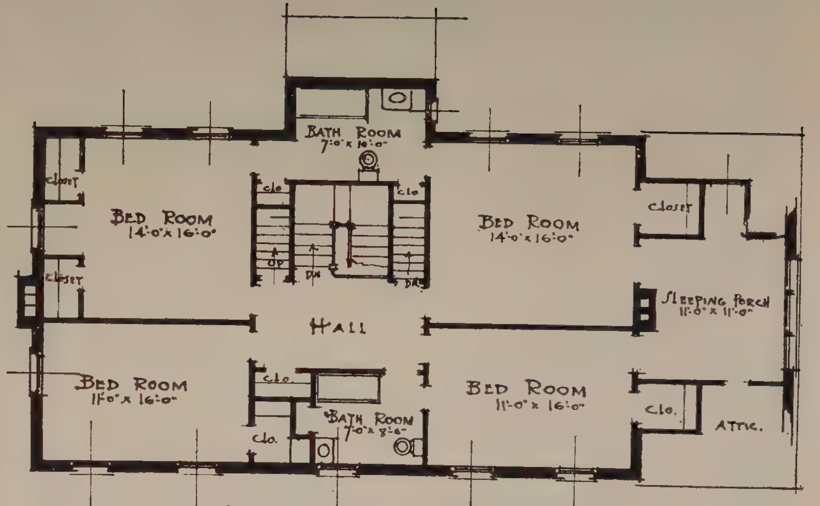
BARNABY MANOR
IN PRINCE GEORGE COUNTY MARYLAND
BUILT PROBABLY BETWEEN 1680-1710
ACTUAL DATE UNKNOWN

MEASURED AND DRAWN
BY
ALBERT P. ERB

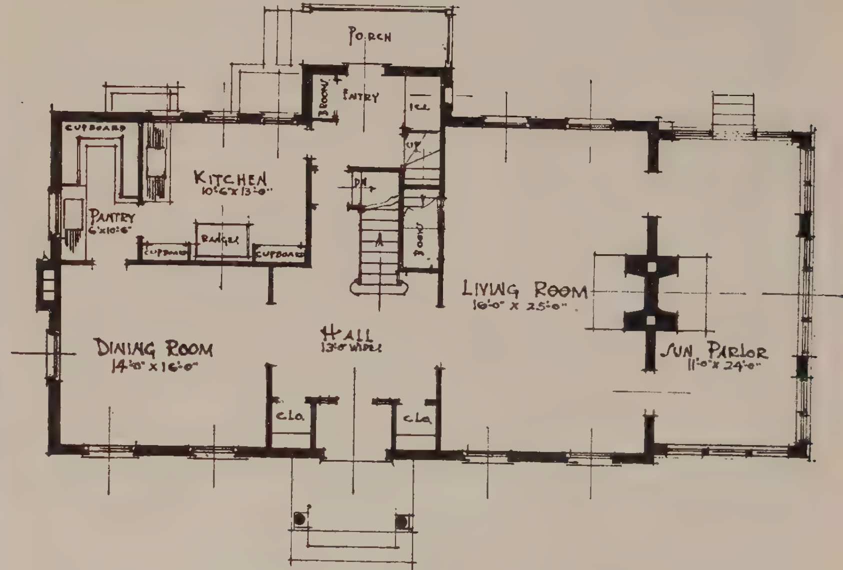
RESIDENCE, EMERY THOMPSON, BEECHMONT, NEW ROCHELLE, N. Y.

Frederick G. Frost, Architect.





SECOND FLOOR PLAN
SCALE 1/8 INCH = 1 FOOT



FIRST FLOOR PLAN
SCALE 1/8 INCH = 1 FOOT

DETAIL, DOORWAY, RESIDENCE, EMERY THOMPSON, BEECHMONT, NEW ROCHELLE, N. Y.

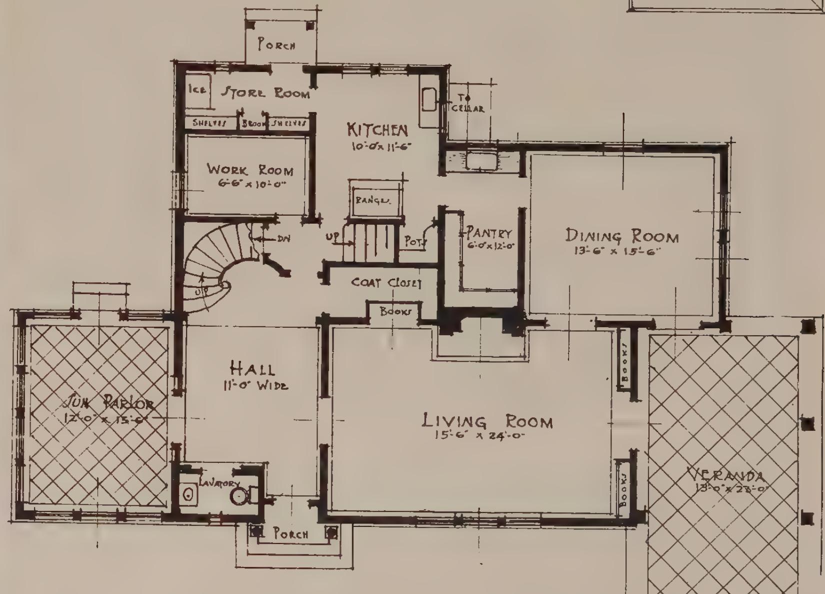
Frederick G. Frost, Architect.

RESIDENCE, RODNEY W. JONES, BROADVIEW, NEW ROCHELLE, N. Y.

Frederick G. Frost, Architect.

DETAIL, DOORWAY, RESIDENCE, RODNEY W. JONES, BROADVIEW, NEW ROCHELLE, N. Y.

Second Floor Plan
Scale 1/8 inch = 1 Foot



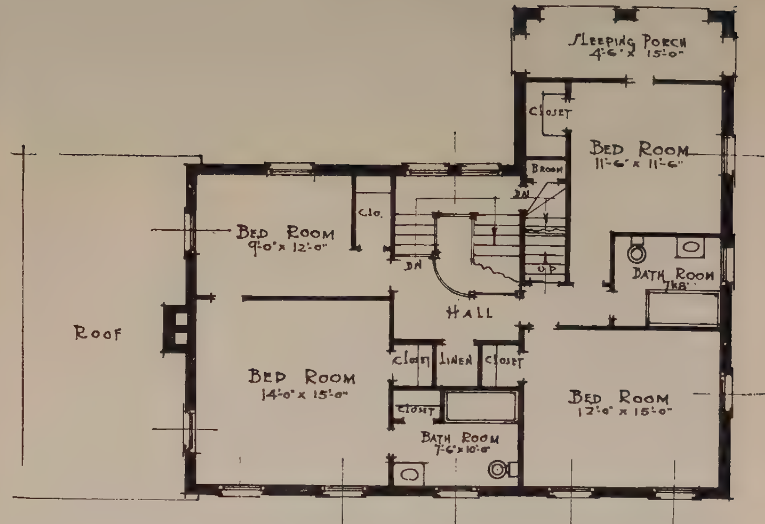
First Floor Plan
Scale 1/8 inch = 1 Foot

Frederick G. Frost, Architect.

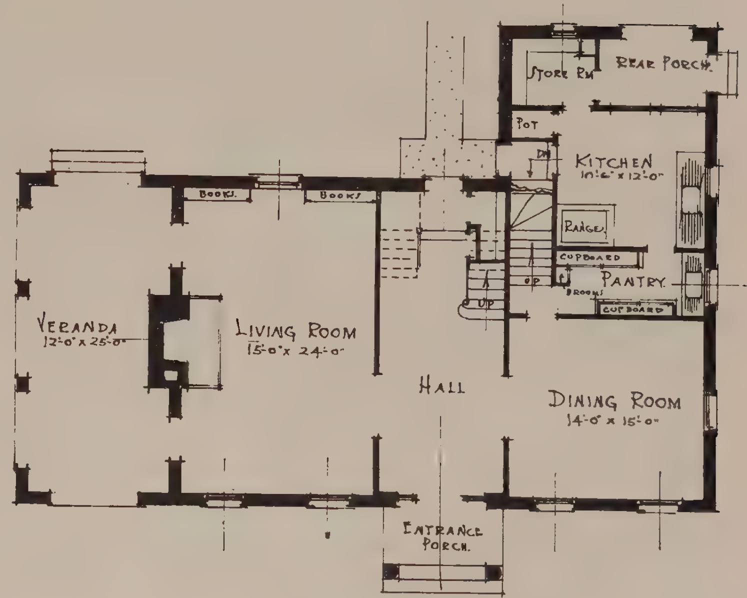
RESIDENCE, JAMES S. ALEXANDER, NEW ROCHELLE, N. Y.

Frederick G. Frost, Architect.

DETAIL, DOORWAY, RESIDENCE, JAMES S. ALEXANDER, NEW ROCHELLE, N. Y.



SECOND FLOOR PLAN
SCALE 1/8 INCH = 1 FOOT



FIRST FLOOR PLAN
SCALE 1/8 INCH = 1 FOOT

Frederick G. Frost, Architect.

ACTIVITIES BUILDING, Y. W. C. A., HOUSTON, TEXAS.

Briscoe, Sullivan & Watkin, Architects. Wm. F. Thompson, Associated.

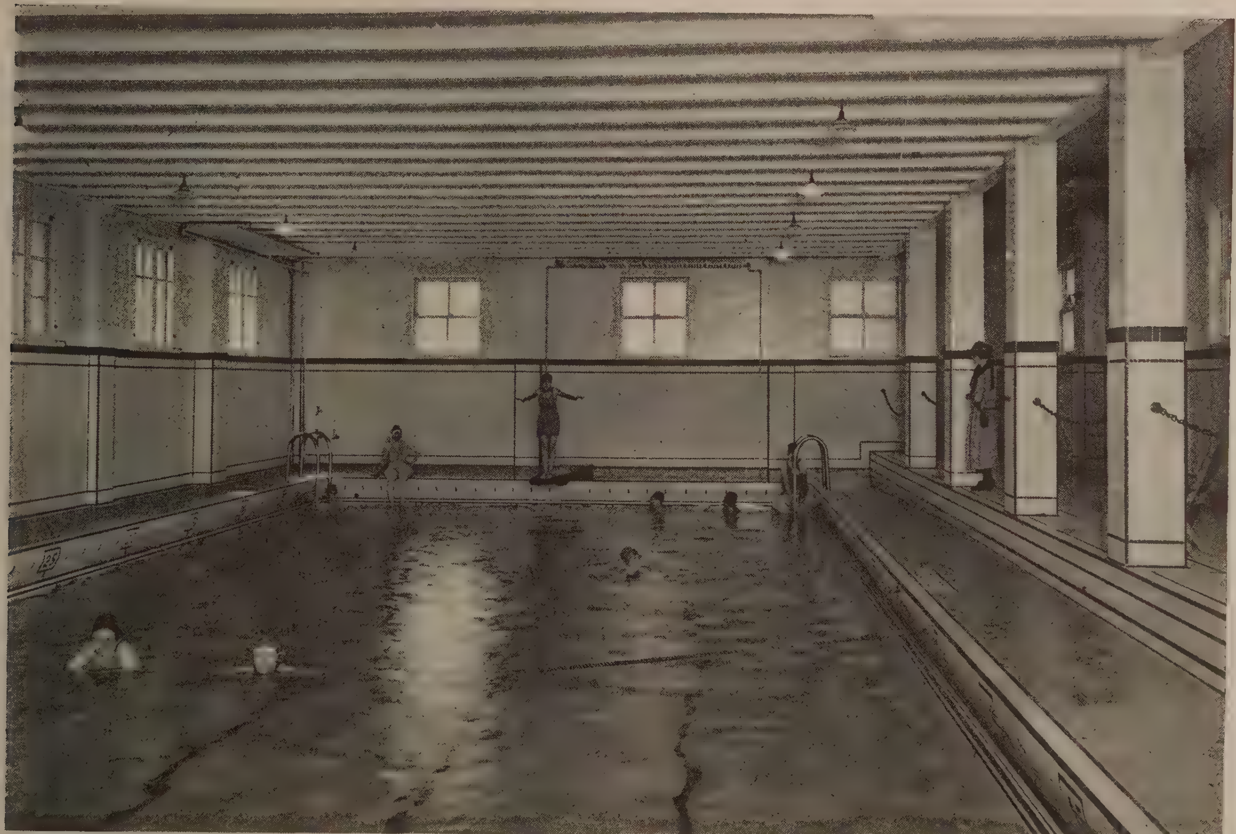
DETAIL.

ENTRANCE-HALL AND STAIRCASE.

ACTIVITIES BUILDING, Y. W. C. A., HOUSTON, TEXAS.

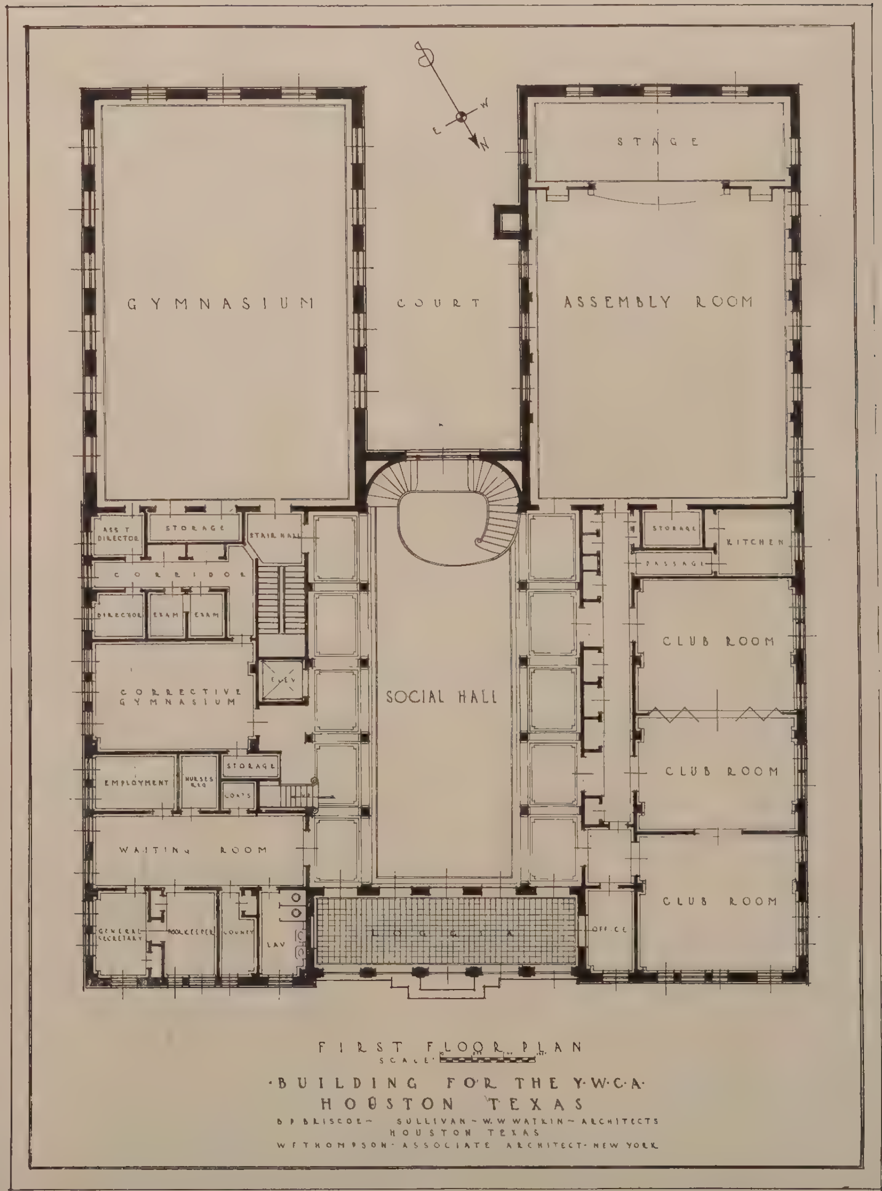
Briscoe, Sullivan & Watkin, Architects. Wm. F. Thompson, Associated.

GYMNASIUM.



SWIMMING-POOL. Briscoe, Sullivan & Watkin, Architects. Wm. F. Thompson, Associate.

Y. W. C. A. ACTIVITIES BUILDING, HOUSTON, TEXAS.



SOCIAL HALL.

Briscoe, Sullivan & Watkin, Architects. Wm. F. Thompson, Associate.

ACTIVITIES BUILDING, Y. W. C. A., HOUSTON, TEXAS.

Boarding Home, Y. W. C. A., Houston, Tex. Briscoe & Dixon, Architects. Wm. F. Thompson, Consulting Architect.

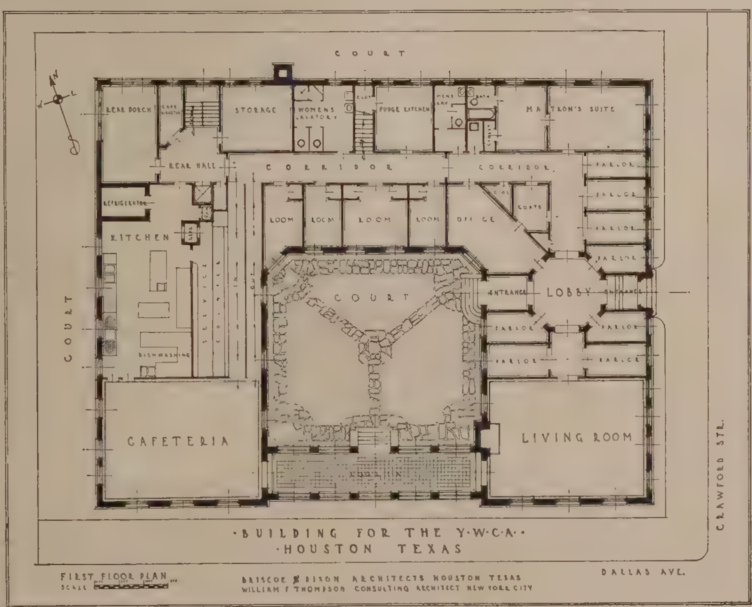
HOUSTON (TEXAS) ACTIVITIES BUILDING

The Houston (Texas) buildings' particular problem, aside from the needs of the local Association's programme, was that of climate. It was necessary to carefully consider the prevailing breezes and to so plan the buildings that they would be at all times pleasant and restful.

The prevailing breezes in Houston are southeast and the activities building is designed to afford a cross draught in all of the important rooms on each floor.

The main social room is high, and with the large window at the staircase, as well as the casement doors opening to the loggia, this room is most inviting in the climate of the Southwest.

A roof garden is provided above the gymnasium, which is one of the practical and attractive features of this building.



HOUSTON (TEXAS) BOARDING RESIDENCE

The central court, facing southeast, is a feature very important in this climate. The court is protected from the cold north winds in winter and has the advantage of the southeast breezes in summer, while it is protected from the hot west sun of the late afternoon.

The balconies at each level on Dallas Avenue serve two purposes: one as an outdoor porch and also as a means of exit in case of emergency. A spiral fire-escape connects these balconies with the court, which makes escape possible but does not permit entrance into the building, thereby making the control of those in charge absolute.

Y. W. C. A. BUILDING, NEW BEDFORD, MASS.

Wm. F. Thompson, Architect.
Edgar B. Hammond, Asso. Architect.

Buildings for the Y. W. C. A.

By William F. Thompson, Architect

THE buildings required for the Y. W. C. A. activities in this country involve a tremendously detailed study of a most intricate plan, which may require provision for all or any of the following interests, in large or small measure, as indicated by local conditions:

Business Administration.
Reception and Social Rooms.
Health Department—
Gymnasium and Dependencies.
Pool and Dependencies.
Food Service—
Cafeteria. | Lunch-Room. | Tea-Room. | Club-Room Service. } And Dependencies.
Girls' Work Department.
Industrial Department.
Educational Department.
Employment Department.
Room Registry.
Assembly Room and Auditorium.
Chapel.
Rest-Room.
Bedrooms.
Roof-Garden.
Moving Pictures.
Outdoor Recreation Ground.

Adequate help's quarters, workshop, storage, etc., etc.

In order to determine just what should go into the building full consideration must be given by the owners to the nation-wide programme of activities for Associations of that particular type and to modifications required by local conditions. The possible and probable developments or contractions of the future must be previewed and the whole scheme outlined only after a thorough study, not only of programme but of the capacity of the association's pocketbook.

To correct the erroneous idea that all Association buildings are financed from a large national fund, permit me to state that such is not the case. All buildings erected are financed by local subscription exclusively.

Economy in construction and equipment is of prime consequence, since funds raised by public subscription are not inexhaustible, and therefore one must carefully plan to keep within the allowance for building and equipment. Provision, however, should be made for future additions that may be required to complete the building, so that the full programme can be carried on.

Economy in maintenance is imperatively necessary. Every dollar's worth of operating cost must be avoided where such cut is possible.

The diversified character of each floor space indicated by the foregoing programme presents an exceedingly interesting problem; the main points of which are suitability and beauty, plus economy.

The building in each and every part must "work," so to speak, smoothly when packed from basement to roof with many people, of many types of mind; of many nationalities and interests. The well paid business and professional woman, the cash girl, the factory employee, the women of the leisure class must feel at home in their own building. To insure a domestic feeling in the design and general treatment of the exterior and interior is of prime consequence, since the Young Women's Christian Association desires everywhere to avoid institutional characteristics.

The problem of effective supervision and economical management of the building is particularly difficult in the large Y. W. C. A., since the entire building is occupied by a constantly shifting population. How to plan so that each floor is adaptable to various uses—so that the noisy elements are segregated—so that each space is properly related to all other spaces when used in their various capacities, adds something of interest to the study required in this particular problem.

The building must meet the needs of the Association's programme, and since this complex machine is for the use of women and has a decided educational value in the artistic realm, it must not only work, but it should be beautiful in design and exquisite in the simplicity of furnishing and decoration.

The architect should prepare a budget for the client so as to show approximately what the completed building will cost when ready for occupancy and operation. If this were done, it would save the architect many unpleasant interviews and reflect more favorably upon the profession as a whole.

The matter of furnishings is also of importance. Many buildings to be used by all classes are very often furnished to suit the taste of one class.

In any public building such as this, simplicity of design and furnishing is vital, inasmuch as its influence may be lasting in the matter of standards of beauty for large groups of the American public.

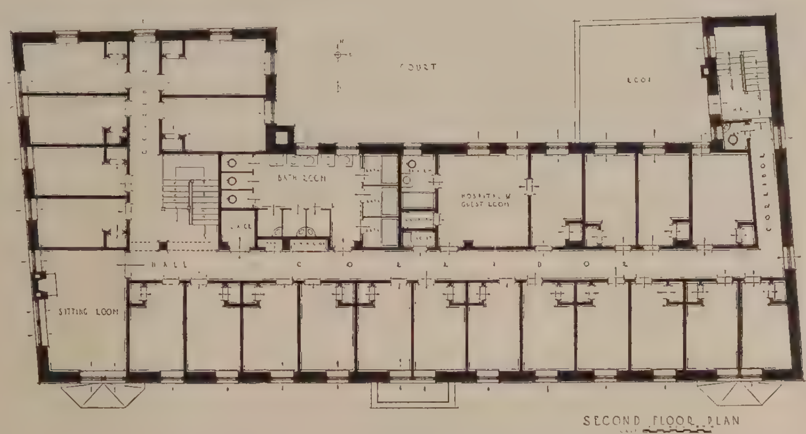
There are many well-meaning persons of wealth who donate a sum of money to be used to erect a building for some need or other—the architect is called in and architecturally he designs a very fine building. He is consulted regarding furnishings and makes a selection that is distinctive and suitable to the building; but it is a question oftentimes whether the whole thing has not been wrought out on too grand a scale, which leaves much to be desired in the effect upon those of small income. A monument has been erected to the donor and to the architect which produces perpetual dissatisfaction among those who can never expect to live permanently amid such surroundings.

We must, of course, strive to educate people to understand good design and good quality, but this can be done step by step with better chance for assimilation. On the other hand, when a building is to be used by people who have or can have all that they desire, then the architect and donor have a free hand; but this is not so where the poor and the rich use a building jointly, as is the case with the Y. W. C. A. buildings.

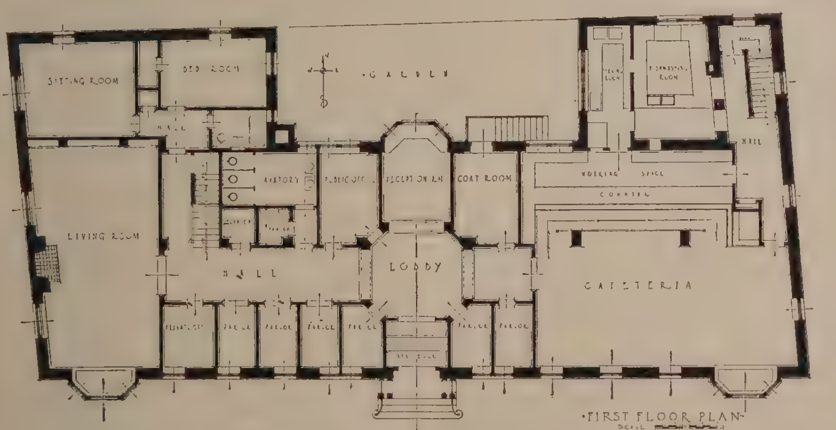
With these requirements in mind, the architect should solve the problem only on a basis of thorough consistency, giving due regard to the type of persons frequenting the premises and the amount of the appropriation. These two items in turn determine plan, specification, design, furnishing, and equipment. Only in so far as thoroughly balanced consideration is given to each of these factors, can it be said that real design has been achieved. If the relative importance of each and every item necessary to the design and erection of a building, as well as consideration of the people who will use it, were reviewed, the following list, therefore, should be an outline of the architect's thought:

Type of Construction	as to	Amount Appropriated.
Kind of Materials		Initial Cost.
Quality of Materials		Maintenance.
Kind of Equipment		People of various classes to use buildings.
Exterior and Interior Design		
Furnishings		

The drawings and photographs reproduced herein show buildings in different parts of the country.



BUILDING FOR THE Y·W·C·A·
BRIDGEPORT CONN·
EDWARD B. CALDWELL ARCHITECT – BRIDGEPORT CONN
WILLIAM T. THOMPSON ASSOCIATE ARCHITECT – NEW YORK CITY



· BUILDING FOR THE Y·W·C·A· ·
·BRIDGEPORT CONN·
·EDWARD B. CALDWELL ARCHITECT – BRIDGEPORT CONN·
·WILLIAM T. THOMPSON, ASSOCIATE ARCHITECT – NEW YORK CITY·

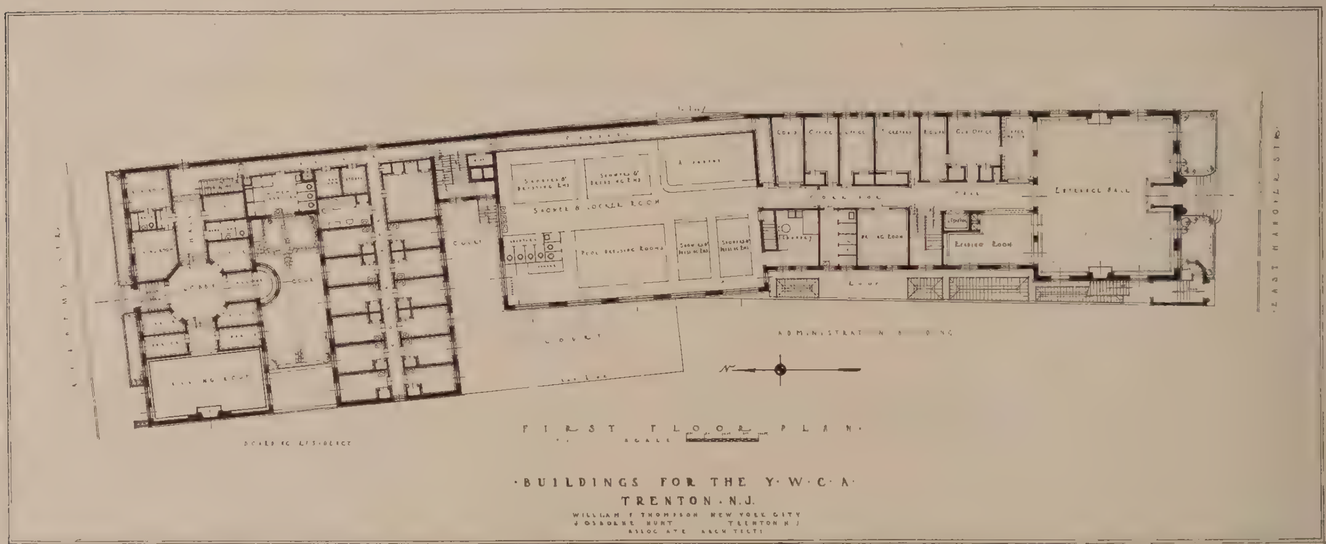
BRIDGEPORT, CONN.

A boarding residence with cafeteria, which is semi-public but principally for the girls living in this building.

The entrance is so arranged that only those living in the building have access to the living-room and other social rooms.

The reception-room, directly opposite the entrance, is a feature, since, on entering, one does not look against a dark blank wall space but instead has a view of outdoors, which is more inviting.

All of the main rooms are designed at a scale used in residential work, and the domestic character is also expressed in the exterior.

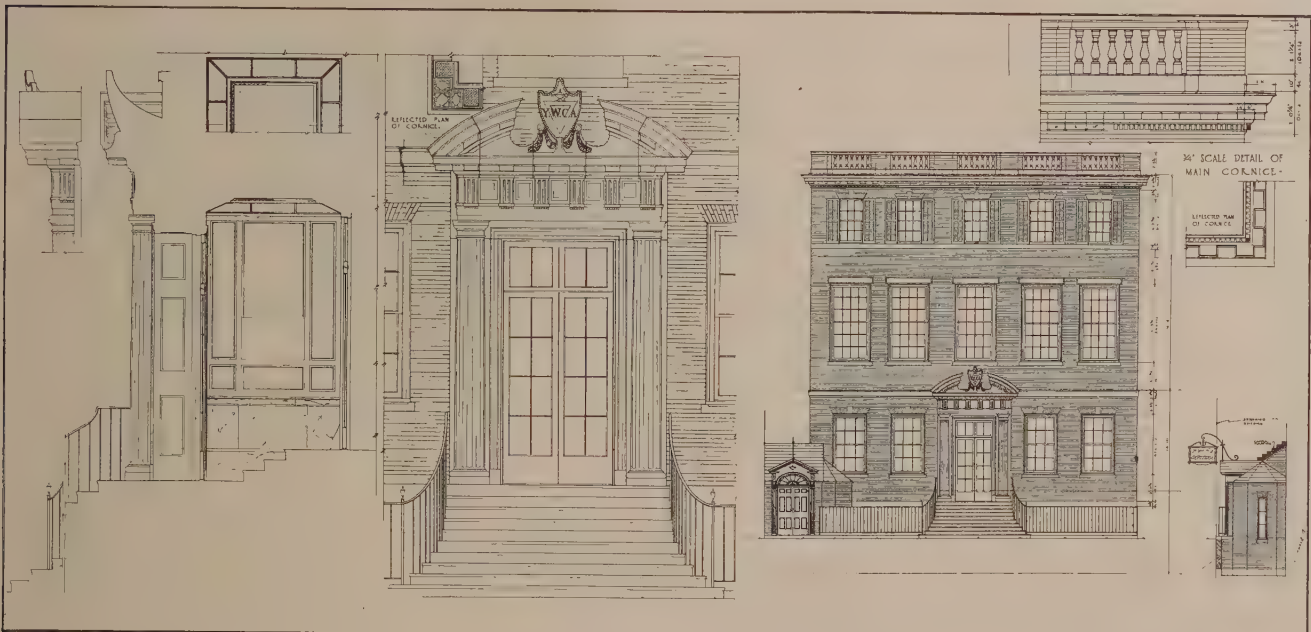


BOARDING HOME, Y. W. C. A., TRENTON, N. J. Wm. F. Thompson, J. Osborn Hunt, Associate Architects.

TRENTON, N. J.

The activities building and boarding residence are on one plot but facing on two streets. it will be possible for girls in the boarding residence to enter the administration building by means of a corridor provided for this purpose.

The large main room of the administration building has three exposures and therefore is well lighted. The two fireplaces will make it attractive and cheerful, and by entering directly into this room one will feel more at home, which is much to be desired.



ADMINISTRATION BUILDING, Y. W. C. A., TRENTON, N. J. Wm. F. Thompson, J. Osborn Hunt, Associate Architects.

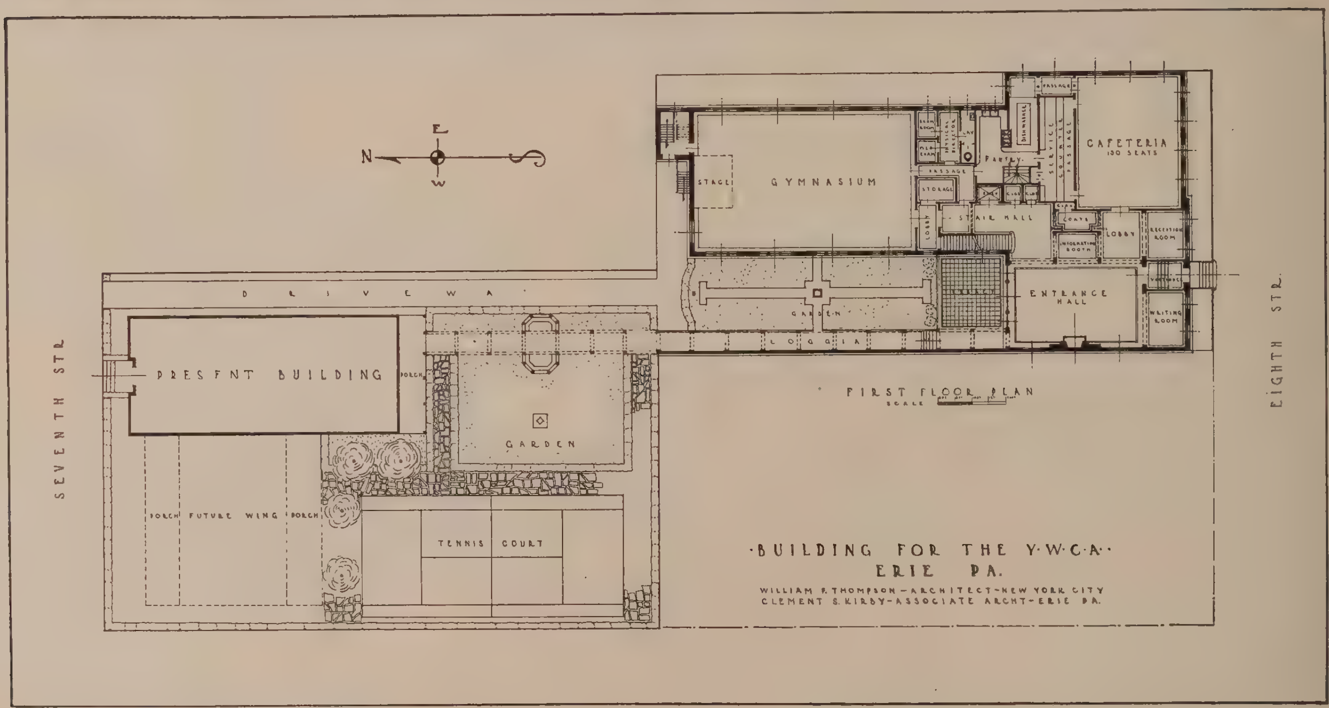
The cafeteria is on the floor below and has a separate entrance from the street, as shown on front elevation, but is also accessible from any part of the building.

The second and third floors contain club and class rooms, gymnasium, etc., and the swimming pool is in the basement. The basement, however, is well out of ground, so that all of the rooms have natural light.

The boarding residence has the usual social rooms and bedrooms.

The heating plant for both buildings is in the basement, at the rear of this building.

All supplies for both buildings are delivered through the driveway from Academy Street, as shown on drawings.



Y. W. C. A. BUILDING, ERIE, PA.

Wm. F. Thompson, Architect. Clement S. Kirby, Associate Architect.

ERIE, PA.

The property runs through from street to street.

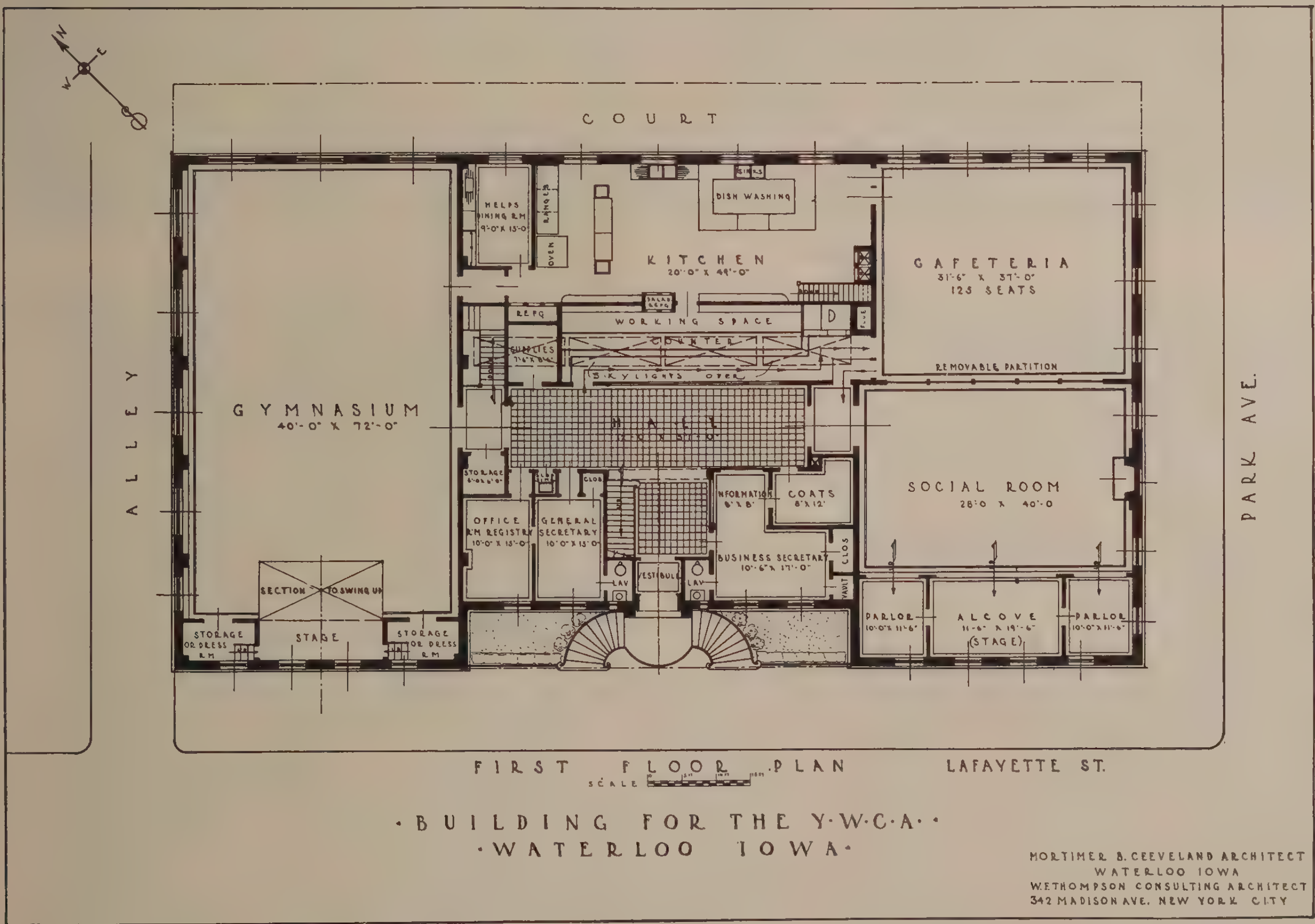
The new building is designed so that upon entering a flood of sunshine greets the visitor through the casement doors, opening upon the paved terrace.

Beyond the terrace is a small garden and on one side a covered walkway to the boarding residence and recreation field.

The building will have a roof from which one can view Lake Erie and the far off hills toward the northeast.

The interiors are Colonial in design and kept small in scale so as to give the idea of a private home rather than an institution.

The second and third floors contain club and class rooms, while the swimming pool is the gymnasium.



WATERLOO, IOWA

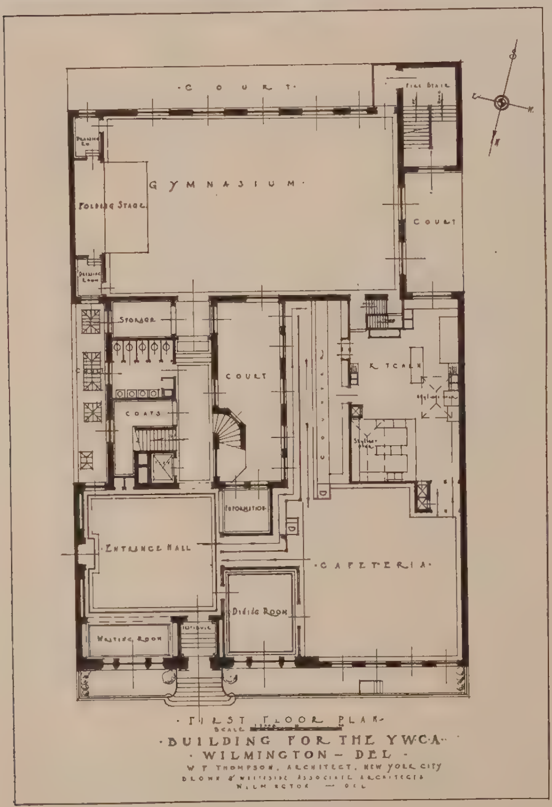
One of the features of this building is the separation of the gymnasium and the social room, while the kitchen is placed so that large gatherings can be served in both of these sections.

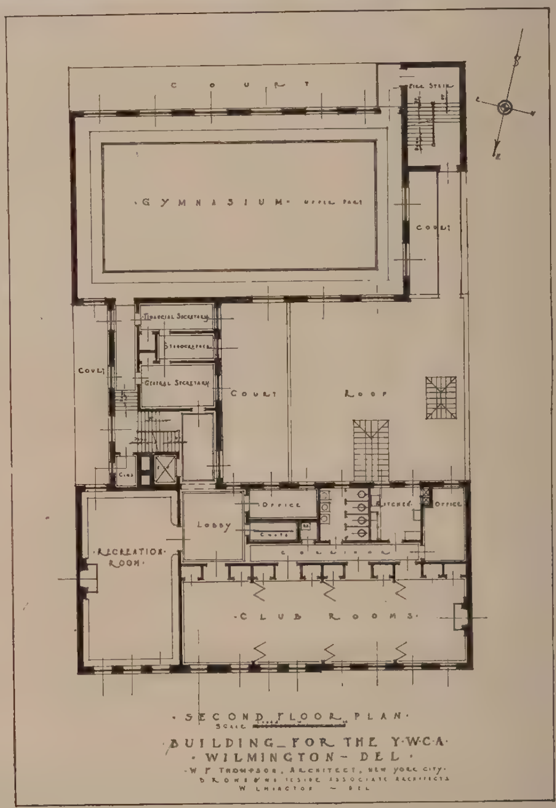
The social room and the cafeteria can be opened into one large room, and the alcoves at the end of the social room serve also as a stage and dressing rooms.

The second floor contains club and class rooms and the third floor a few rooms for transients.

The cafeteria counter is lighted from skylights above, and the hall also borrows light from the same source through windows, as indicated on the plan.

The exterior is of red brick of various shades, with limestone entrance, band courses, and cornice.





Y. W. C. A. BUILDING, WILMINGTON, DEL. Wm. F. Thompson, Architect. Brown & Whiteside, Associate Architects.

WILMINGTON, DEL.

The large central court (above the second floor) opens toward the south, so that all of the main rooms will be well ventilated and will benefit thereby from the prevailing breezes of summer.

This building presents a problem in elevation because of its height, and in order to keep the domestic character so essential to association buildings, the main part was framed with marble quoins and denticulated cornice, and the balance treated in a simple manner so as to subdue the upper floors and the west wing.

The walls are of red brick of various shades with white marble entrance, quoins, and cornices.

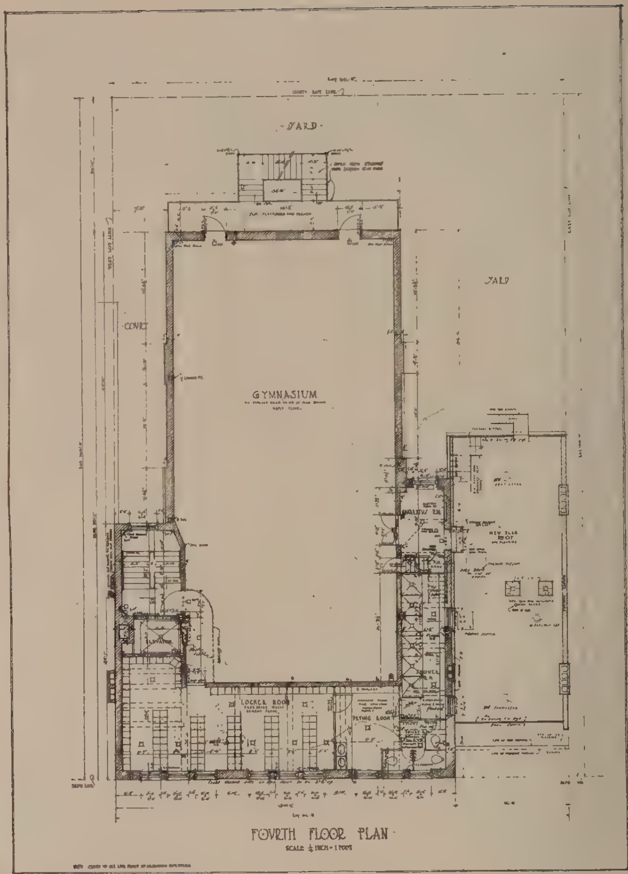
GYMNASIUM.

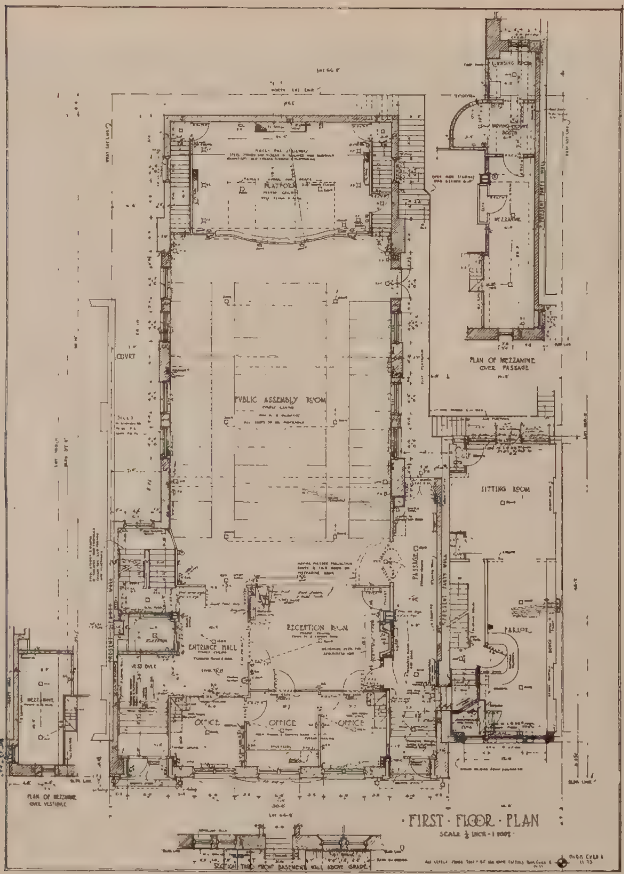
ASSEMBLY-ROOM.

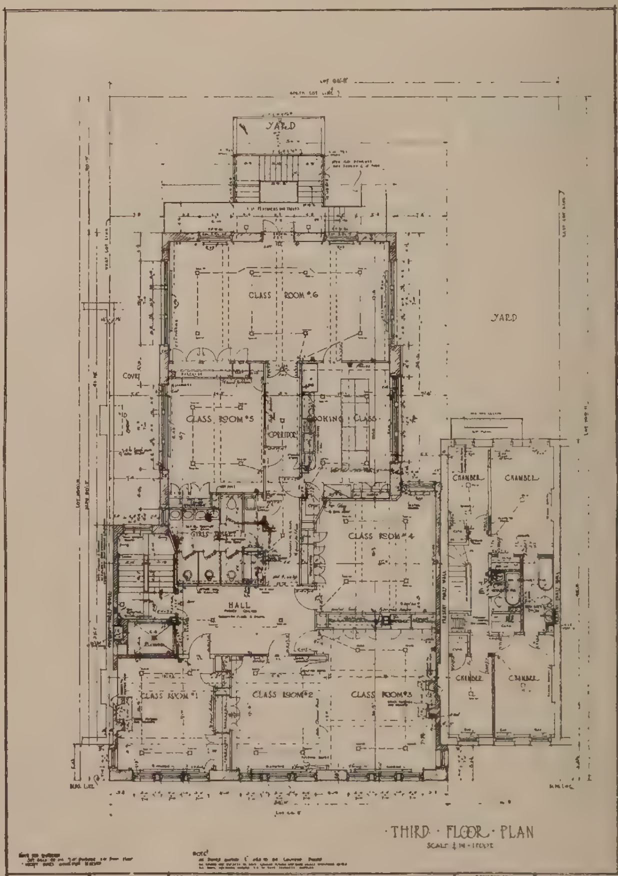
W. L. Rouse and L. A. Goldstone, Architects.

FEDERATION SETTLEMENT, NEW YORK CITY.

CLASS-ROOM.







FEDERATION SETTLEMENT, NEW YORK CITY. W. L. Rouse and L. A. Goldstone, Architects.

The Quality of Material

By Richard P. Wallis

FOURTH ARTICLE

N. Building Stone

I. *Laboratory Tests:* (*a*) Stone from other than well-known quarries, intended for use in building construction, should be subjected to chemical analysis to determine its durability and weathering quality. This analysis should be compared with that of some well-known stone of the same kind. If the sample is found to contain a larger percentage of materials subject to the attack of sulphuric acid or carbolic acid, or is soluble in water, the stone should be rejected. The presence of iron pyrites should also cause rejection of the sample.

(*b*) In subjecting to crushing tests the cubes should be sawed and not chiselled. They should be tested on their natural bed. Three specimens at least should be tested in each case.

II. *Field Tests:* (*a*) *Absorption.*—The degree of absorption shown by a sample of stone indicates the degree of durability of the sample, since the less moisture the stone absorbs the more durable it is apt to be.

A sample absorbing 10 per cent or more of its weight should be regarded with suspicion until its durability has been established by subjecting it to the weather for a considerable period of time.

In the case of a sample containing a considerable amount of lime or clayey matter, the absorption of 5 per cent by weight is considered to be too great.

To determine this absorbent power the sample should be thoroughly dried in a temperature of about 100° F., and carefully weighed, then soaked in pure water for twenty-four hours. It should then be removed from the water and the surface allowed to dry in the air, and then weighed. The increase in weight indicates the weight of the water absorbed, from which the percentage absorbed may be computed.

(*b*) *Weathering.*—Soaking a sample for some days in a dilute solution containing 1 per cent of sulphuric and hydrochloric acid will afford some idea as to the resistant power of the stone to ordinary city atmosphere.

(*c*) *Carbonates.*—A drop or two of acid on the surface of the stone will create an intense effervescence if there is a large proportion present of carbonate of lime or carbonate of magnesia.

(*d*) *Solubility.*—In order to determine the amount of easily dissolved earthy or mineral matter contained in a sample, the following test may be applied. Pulverize a small sample of the stone and place the fragments in a glass filled about one-third with clear water, and allow it to stand for at least half an hour. Then thoroughly agitate the glass. If the sample is highly crystalline and the particles well cemented together, the water will remain clear and transparent. If the specimen contains uncrystallized earth-powder, the water will present an appearance more or less turbid or milky, depending upon the quantity of loose material contained in the stone.

(*e*) *Freezing.*—Two or more stone cubes should be dried and weighed and then immersed in water for twenty-four hours. The cubes should then be frozen and thawed a number of times. After the last thawing the sample should be dried in an oven and the loose particles removed. The cubes should then be weighed and the loss in weight caused by the action of the freezing and thawing process noted.

(*f*) *Quenching Test.*—The sample should be heated to a temperature of from 500° to 600° F., and, while hot, plunged into water at 70° F.

The loss in weight due to spalling and disintegration should be noted in terms of the weight of the dry stone.

(*g*) *Soundness.*—A good building-stone should give a clear, ringing tone when struck with a hammer. Granite is tested in this manner for the presence of seams.

III. *Inspection:* (*a*) *Texture.*—In comparing stones of the same class, the least porous, most dense, and strongest will generally prove to be the most durable in resisting the action of the atmosphere.

(*b*) *Fracture.*—A fresh fracture, when examined under a magnifying glass, should appear bright, clean, and sharp, with the grains well cemented together. A dull, earthy appearance indicates a stone subject to early deterioration.

O. Slate

I. *Field Tests:* (*a*) *Absorption.*—A good slate should absorb but little water. Immerse a sample in water, so that one-half of its height is out of the water. If the water rises in the upper half it indicates that the slate is not of good quality.

II. *Inspection.*—A good slate should give a sharp metallic ring when struck with the knuckles, should not splinter under the slater's axe, should permit of drilling holes for the nails without fracturing, and should be firm at the edges, without tendency to crumble.

If a clayey odor is produced by breathing on the slate, it is an indication that the slate will not weather well.

P. Structural Steel

Structural steel is a manufactured article, and as such should conform to definite specifications concerning its chemical and physical properties.

I. *Laboratory Tests.*—The standards usually adopted in specifying steel are those of the American Society for Testing Materials. See document No. A 9–16 for the detailed requirements.

Briefly summarized the requirements are as follows:

		STRUCTURAL STEEL	RIVET STEEL
Phosphorus	Bessemer....	Not over .10%	....
	Open-hearth.	Not over .06%	Not over .06%
Sulphur	....	....	Not over .045%

TENSILE STRENGTH

Tensile strength in pounds per square inch, 55,000–65,000, 46,000–56,000.

Structural steel should bend cold 180 degrees around a pin the diameter of which is equal to the thickness of the

specimen, without fracture on the outside of the bent portion.

Rivet steel should bend cold flat 180 degrees on itself, without fracture on the outside of the bent portion.

II. *Field Tests:* (*a*) *Rivets.*—The rivets when in place should be struck with a hammer to determine if they are tightly driven. Those found loose should be marked with a cold chisel, so that the workmen may not obliterate such markings, as is sometimes done when chalk is used for this purpose.

III. *Inspection.*—The supervisor should see that holes for field rivets are punched where required, and that they are clean-cut and do not have ragged edges.

All rust, scale, dirt, etc., must be removed before painting.

Where built-up members have pieces abutting it should be seen that the inaccessible parts are painted before fabrication. Abutting joints should be full and square, and all members should be free from twists, kinks, and bends.

Q. Cast Iron

I. *Field Tests:* (*a*) A good casting will give a clear sound when struck with a hammer, while an imperfect casting will give only a dull sound.

(*b*) A casting when struck with a hammer should indent and not break off.

II. *Inspection.*—Structural cast iron should always be examined for concealed faults, such as blow-holes, cold-shuts, and honeycombs. These are sometimes filled with sand and painted to resemble a perfect casting. Any evidence of warping or other initial strain should constitute grounds for rejection.

R. Wrought Iron

I. *Field Tests:* (*a*) *To Tell Wrought Iron from Soft Steel.*—Clean the sample of all grease and scale and immerse in a solution composed as follows: water 9 parts, sulphuric acid 3 parts, muriatic acid 1 part. The acids should always be poured into the water in preparing this solution. The mixture should then be allowed to cool.

The specimen should be left in the solution for 15 or 20 minutes, and then removed and rinsed in water. The fibre should show plainly; if not, the process should be continued.

Soft steel dissolves uniformly, while wrought iron presents a distinctly fibrous appearance when subjected to this test.

(*b*) *Texture.*—A section of wrought rod or plate, when polished, shows more or less laminations of slag and ore.

If the bar is notched on one side and bent away from the notch it will break along the slag laminations. When notched all around and broken, the fracture will be coarsely crystalline, and if broken in tension the fracture will be irregular, non-fibrous.

II. *Inspection.*—Wrought iron should be tough, ductile, fibrous, uniform in character, and should have an elastic limit of not less than 26,000 pounds per square inch. The iron should be thoroughly welded in the rolling, and should be straight, smooth, and free from injurious seams, cracks, blisters, buckles, cinder-pockets, and imperfect edges. The American Society for Testing Materials has published standard specifications for welded wrought-iron pipe, No. A 72–18.

S. Pipe

Occasionally it becomes necessary for the supervisor to determine whether certain pipe is of wrought iron or steel

I. *Field Test:* (*a*) *Manganese Test.*—This test is based upon the well-known fact that the manufacturers of steel-pipe add to the fluid metal in the Bessemer retort or concerter a certain amount of ferro-manganese in order to make it possible to roll and weld the over-oxidized metal. There is no such addition in the manufacture of genuine wrought-iron pipe.

In making this test a number of sample chips are placed in test-tubes, and from 10 to 12 drops of nitric acid, diluted with an equal amount of water, are added. The solution is then heated for a few seconds over a candle or alcohol burner.

After the test-tube has cooled off, a small amount of sodium bismuthate is added to the solution. If the sample is steel a decided pink color will show in the tube, whereas if of wrought iron the solution will show a light-brown color, which gradually fades away, leaving a brownish residue in the bottom of the tube.

II. *Inspection.*—Inspection of a fractured surface will often enable the observer to determine the nature of the material. The wrought iron will show a fibrous fracture, whereas the steel will be crystalline in appearance.

(*To be continued*)

Announcements

Ralph Evans Hacker, A. I. A., announces his withdrawal from the firm of Ernest Sibley, Architect, L. C. Licht, Hacker & Hacker, Associated, and the opening of his office at 1012 Palisade Avenue, Palisades, N. J., for the practice of architecture. He will continue to specialize in schools only.

G. F. Ashley and Albert J. Evers, of Ashley & Evers, architects, 58 Sutter Street, San Francisco, announce the opening of their Los Angeles offices, in charge of Mr. Ashley, 626 South Spring Street, Los Angeles. Would like to receive catalogues.

Alexander C. Eschweiler is pleased to announce that he has associated with himself his sons under the firm name of Eschweiler & Eschweiler, architects, and will be located at 210 Mason Street, Milwaukee.

Arthur T. Remick, architect, announces the removal of his office from 135 East 43d Street to 47 West 43d Street, New York City.

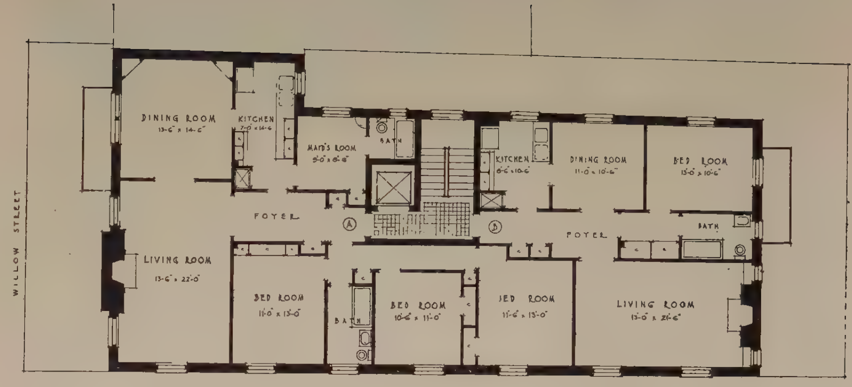
Leonard Anthony Gliatto, architect, announces the opening of his office at 64 East Van Buren Street, Chicago. Catalogues requested.

Raymond T. Gleeson, Thomas F. Mulrooney, and William M. Burke announce the formation of the partnership of Gleeson, Mulrooney & Burke for the practice of architecture, with offices at 404 South Broad Street, Philadelphia. Catalogues requested.

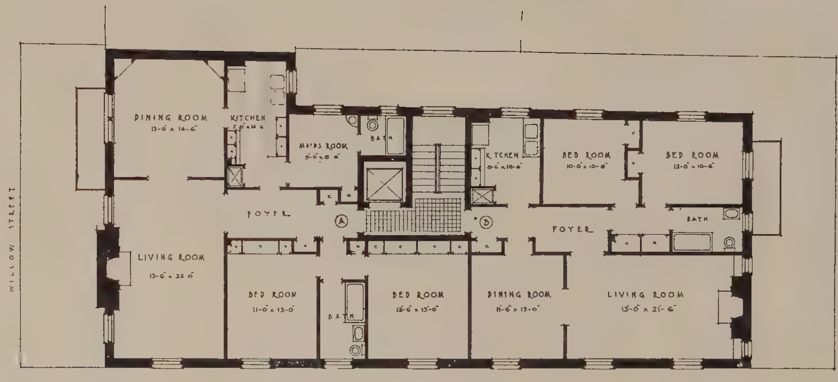
On August 1, 1923, the address of Leonard Willeke was changed from 39 Moss Avenue to 1100 Berkshire Road (Grosse Pointe Park), Detroit, Mich.

Harold Thorp Carswell, of Walker & Carswell, registered architects, announces the opening of an office at Room 1001, Jefferson Building, 1015 Chestnut Street, Philadelphia, for the practice of architecture. Formerly in the office of Cram & Ferguson, architects, Boston, Mass., and for the past eight years in the architectural department of The Cathedral at Bryn Athyn, Penna.

CLARK-WILLOW APARTMENTS, BROOKLYN, N. Y.



FLOOR PLAN
· 7 AND 4 ROOM APARTMENTS ·



· FLOOR PLAN ·
· 6 AND 5 ROOM APARTMENTS ·

D. D. Merrill, Architect.


MAIN ENTRANCE.


VESTIBULE AND HALL.


LIVING-ROOM IN APARTMENT.


DINING-ROOM IN APARTMENT. D. D. Merrill, Architect.

CLARK-WILLOW APARTMENTS, BROOKLYN, N. Y.

Steel and Reinforced Concrete Structures Will Replace the Old Native Methods of Building in Japan

By W. A. Starrett

YOKOHAMA, with its modern docks and rows of dingy European structures, stolid and stodgy, not unlike the water-fronts of London or Amsterdam, its brick hotels, with illusory modernized exteriors, gives a feeling of disappointment to the visitor who on his first venture from shipboard is looking for the picturesque in Japan. The coolies and sampans go their accustomed way, but the little toy gardens and thatched cottages are not to be seen, and one must wander into the byways to catch even a glimpse of the remnants of the ancient native construction.

The stranger wanders in disappointment through the narrow streets, lined with these same stodgy European types of fifty years ago—stolid stone, iron-shuttered warehouses, with bolster beams projecting from above loft openings, after the manner of our merchant ancestors who traded from old India House. For it was these who opened Japan and brought with them their ideas of stone and brick warehouses—godowns, they are called; and following came their counting-houses and office-buildings, which the imitative Japanese quickly copied, and, having copied and learned, repeated and duplicated down to the present day.

One peers behind the maze of pole scaffolding, covered with matting, that everywhere in Japan proclaims a building under construction, and is surprised to find these same old type structures being built—sometimes with a few modern gimcracks, the offering of enterprising American commercial agents—but essentially of the same types that were introduced into Japan nearly a century ago.

There are of course exceptions; particularly are they to be found in Tokio, and even in Kobe and Osaka. Even these, however, have a distinctly foreign aspect to American eyes, so used to the last word in convenience and economy of design. To us the banal German influence—"Dutch" (there is no other word that will express it)—leaves the American troubled and wondering as to how these obsolete structures ever found their way into Japan. English commercial architecture lent its disservice to the Japanese with its ponderous thick exterior walls, making windows shadowed at the back of deep reveals; with cumbersome interior cross walls, and all in a country of soft and soggy bottoms, where lightness of construction and scientific engineering design should have been the first consideration.

Japan sent her architects of the last generation to France, Germany, and England, as we did; but how differently they applied the knowledge which they acquired! Perhaps one explanation is that the Japanese did not have the opportunity on their return to collaborate with structural engineers, as our architects did, to gain and apply that structural skill which was then fast being whipped into a science—a science which might literally be said to have been developed almost in a decade by contemporary American constructors, leading the world in the art of building.

Japan builded truly and well out of that old school, and amazing indeed is the skill with which ideas brought from halfway around the world were applied by the intrepid and fortunate few who were privileged to study abroad, returning, as they did, as missionaries to persuade a nation to lay down the structural usages of a thousand years and take up with something absolutely revolutionary. And however obsolete may seem many of the structures that one sees going up in almost any Japanese city, it must not be forgotten that these types have been, up to now, adequate to the Japanese requirements.

A tremendous metamorphosis, going to the very heart of the commercial and social life of Japan, was produced by the introduction of the European structure. The wrench necessary to accommodate the people to these novelties must have been very great. It is not to be expected that they will immediately turn again to still another form; for, from the point of view of general convenience, equipment, and arrangement, the modern American type of structure is as far ahead of the adopted European type in Japan as those old European forms are ahead of the ancient pagodas and kuras of the days of the shoguns.

While Japan largely missed our era of skeleton steel structures, concrete, when it came, fairly took the country by storm. Concrete and *nouveau* art flourished like weeds, while the conservative steel skeleton, overlaid with the adaptation of the classical designs which we in America have come to regard as our most beautiful and dignified work, was largely passed over by the Japanese. It might be said that only in the past few years did the more progressive of the Japanese appreciate that perhaps they had missed something in undertaking the rebuilding of their cities and industries—the task that fate has set for Japan.

It is easy to stand in a Japanese city and visualize a Woolworth Building or a Boston Public Library on almost any corner. It is a very different matter to construct out there a modern structure, to marshal the leadership and instruct the native labor, to organize where no organization exists, to translate drawings from shaku and metres to feet and inches, and accurate notations from Japanese to English. These are only a few of the problems.

Tokio, like most cities of Japan, stands on an alluvial plain—a river delta formed by the erosion from the mountains which everywhere abound in Japan; a soft, muddy bottom, with an evil reputation for allowing buildings to settle, and with Mother Nature pitching in frequent earthquakes of greater or less severity. But under that silty alluvial deposit there is excellent sand, and under the sand hard-pan, a splendid foundation soil, an American engineer would say; and, with the water-level only a few feet below the surface, a splendid place for a pile foundation.

When, a few years ago, American constructors were asked to undertake the building of some really modern structures in Japan, these questions and many others had to be met. Also the Japanese, with that progressive spirit which keeps them in our constant admiration, had made careful study of these questions, and had sent intelligent observers to America and elsewhere to collect data and ideas for these new buildings. Earthquakes and soggy bottoms had made the Japanese people cautious. The American pneumatic caisson had attracted their attention, but the large amount of plant and equipment necessary was a great obstacle, there being nothing of the sort in Japan. Borings showed the hard-pan to be fifty or sixty feet below the surface in Tokio, and with an admirable ingenuity the Japanese engineers devised an open caisson to be penetrated down to hard-pan. One of the features of the scheme was the use of a diving outfit, to

be worn by the workman who would dig at the bottom of the caisson. Unfortunately, when the caisson "dropped," the workman in his diving suit was apt to be catapulted up and out of the caisson, paraphernalia and all. A workman was found who could actually stand this ordeal, but the hazard was very great, however commendable his willingness; and since the operation in hand would require some hundreds of caissons, it was deemed advisable to adopt some speedier and surer method than one depending on the genial willingness of this aquatic virtuoso.

Sturdy Oregon piles were imported, long enough to reach the excellent hard-pan; the unaccustomed sound of great American steam pile-drivers rent the calm of old Tokio for two or three months, and the bogie of Tokio's soggy bottom was forever laid. How simple and how obvious, but under the circumstances a revolution, in view of the fact that many of the quasi-modern structures of other years lean and careen from settlement, caused by those earlier Japanese builders' trying to conquer the instability of the soil from above, instead of going through it to the solid foundation that nature had provided.

And yet the interest in these first American construction ventures does not lie so much in the innovations that they have introduced as in the contrasts, the transitions, that are everywhere observed, and the adaptation of that which is found best and most natural in the Japanese themselves. For make no mistake—the Japanese is a versatile and adaptable workman.

Japan will probably never build high buildings. The leading cities have wisely joined in uniform building codes, and all of them limit the height to one hundred shaku (feet)—about eight stories. No doubt many considerations of congestion, traffic, and policy dictated the wisdom of this limitation, but the earthquake problem was the determining factor. The Japanese in recent years have made a profound study of earthquakes; perhaps the most advanced scientists in the world on that particular problem are to be found in Japan, for with them it is an ever-present menace, andthrough the centuries the Japanese have had reason to fear this dread thing. But the truth is that only in recent years have they done anything really scientific in meeting the problem in their structures. Sentimental tourists, always alert for evidences of great subtlety in the Japanese, point out how adroitly the native house is constructed to meet the earthquake. The roofs are heavy and solid, generally covered with weighty tile. This is all very well as a protection against the weather and as a fire preventive in cities; but as an engineering expedient against earthquakes, it is a myth. When the tremor comes, the spindly corner posts of the structures rock and gyrate, setting in motion the heavy roof, which, if it does not careen from its flimsy moorings, commences to shed its tiles into the streets, and like spilled dishes they clatter down, often causing casualties that would never have happened had the roofs been of lighter construction and properly engaged to the side walls and foundations. Inquiry develops the fact that a large number of the casualties in earthquakes in Japan come from falling roofs and tiles.

Modern structures of almost any type, built throughout Japan, prove that the native construction had been its own worst enemy and that the earthquake disturbances, however undesirable, have been largely aided and abetted by the native construction methods, from which relief has been obtained by the adoption of things Occidental in building. This is not to say that the earthquakes are not a menace, nor that modern construction solves the problem, for in fact there is no solution. No matter how severe an earthquake they may prepare for, an even more severe one will surely upset calculations; and there is no controlling of earthquakes or determining what may be the most severe possible. But for a given problem, the light skeleton structure so familiar to Americans is undoubtedly far superior to anything heretofore attempted in Japan. Every element that an earthquake of moderate severity has been known to produce can be met through the standard formulæ of strains and wind-bracing, now the common knowledge of the American engineer. The menace of earthquakes of great severity will probably always hang over the heads of the Japanese people like the sword of Damocles; but in our skeleton steel and modern reinforced concrete, America has contributed to Japan a large measure of relief from this scourge. Perhaps the Japanese in their untiring ingenuity will develop it to even greater perfection.

It is the laudable ambition of the Japanese to acquire, as early as possible, full knowledge of the best in American construction methods, so that they may carry on their new-found industry without outside assistance. Eventually they will attain this, but how soon is a matter of speculation. Few people realize the interdependence of American constructors, architects, and engineers, and how mutually helpful are the vast building enterprises constantly going on in our country—how keen the competition for new ideas and conveniences among those who furnish the accessories. Separated from this current of progress, obsolescence is apt to set in, for it is only by sustained vigilance that American constructors keep abreast of the progress in their art. Japan, far removed and not attuned to the changing scene, may find herself, after the lapse of a few years, again in the rear-guard of construction progress. Construction and methods are ephemeral, and if we may claim leadership in construction in America, close contact with American progress must be maintained.

From "New Construction in an Ancient Empire," by W. A. Starrett, in the September number of "Scribner's Magazine."

Travelling Scholarship of the Alabama Marble Company

A JURY of Award, consisting of Mr. R. Clipston Sturgis, of Boston, Mr. Abram Garfield, of Cleveland, Mr. Donn Barber and Mr. John V. Van Pelt, of New York, have awarded a travelling scholarship of $1,800, established by the Alabama Marble Company, for the purpose of studying the use of interior marbles in Europe, to the winner of the competition for a small bank building, Mr. Frank Martinelli, of New York City.

The winner of the second place was Philip Sanfilippo.

The competition was conducted under the guidance of the Educational Committee of the American Institute of Architects.

Prize Winners in the Advertising Contest

The winners of the prizes for the best and most constructive criticisms of advertising in the September number of ARCHITECTURE are as follows: First prize, $50, to M. C. Finley, St. Louis, Mo.; second prize, $25, to Harold R. Sleeper, New York; third prize, $15 worth of architectural books published by Charles Scribner's Sons to H. Vernon Lee, Boonton, N. J.; fourth prize, $10 worth of architectural books, to R. C. Spencer, Chicago, Ill.

The Construction of the Apartment-House

By H. Vandervoort Walsh

Instructor of Construction, School of Architecture, Columbia University

ARTICLE IX

Notes on Planning and Working Drawings of Non-Fireproof Apartments

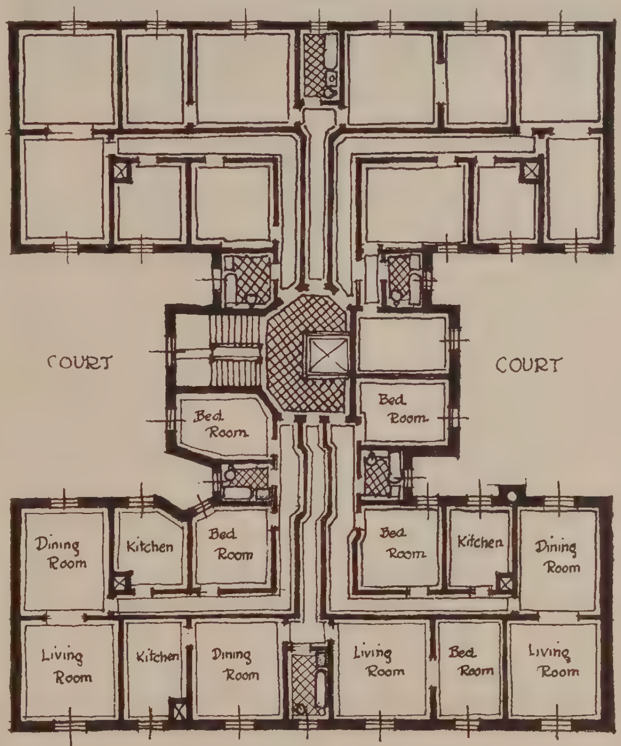
WE cannot separate construction from design, and so we must intrude now and then upon this topic. One cannot prepare the plans for an apartment-house unless he knows how it is to be constructed. The general project type of plan drawing will not do, for economy of space is such a factor that the width and size of every partition on the plan is important. The problem is usually presented in about the following way:

A plot of ground, say 50 by 100 feet, is the basis on which to work, and a limited sum of money is to be invested which must show a large income from the property. Into an area, limited by law to 70 per cent of the lot area, the designer must crowd living-rooms, dining-rooms, bedrooms, toilets, kitchens, and closets. They must not be too big, or they will not return enough money to the owner, and they cannot be too small, or they will violate either the laws of decency or those of the Tenement House Department. Laws governing the sizes of back yards, interior courts, exterior courts, offsets, heights of ceilings, sizes of windows, sanitary arrangements, methods of construction, fire precautions, and a thousand little details must be known and observed. To patiently solve the plan of an apartment with all the fixed conditions that are imposed by law requires something of the spirit of the Chinaman who carves, slowly, from boxwood a curious puzzle.

Now such a confusion of petty details has made many a designer of apartments forgetful of certain general principles of good domestic planning, and, as a result, we find an unusual number of badly planned middle-class walk-up apartments. It is this type of apartment that dominates in numbers, and it is usually planned by some young architect or by one sadly underpaid for his labors. The speculator builder does not often pay for wisely studied plans, being rather narrow in his knowledge of good planning. Gradually, however, conditions are being changed, and more expert designers are being permitted to enter the field.

But we would like to call attention to a curious error of planning that is found so often in this type of apartment, which seems to be the result of a loss of perspective by the designer as he plods his way through the maze of small details and restrictions. This same designer would never, in planning a detached house, mix up the triple division of rooms inherent in any house, namely the living quarters, the sleeping quarters, and the service quarters. He would never think of having his entrance-hall pass by the kitchen door or by the bedroom doors before leading into the living-room. The service quarters would be carefully separated from the living-room and the dining-room, and the bedrooms would be on the second floor, or in a bungalow set apart by a small private hall, and yet many apartment plans show an entire disregard of this simple principle of separating the three parts of any group of rooms for home life.

The plan shown in Fig. 1 is a fine illustration of this neglect of simple principles. One of the apartments in this plan requires the guest, entering it, to pass down a narrow private hall past toilets, bedrooms, kitchen, and actually through the dining-room before entering the living-room.



EXAMPLE OF A VERY BAD PLAN – FIG. 1

Another apartment shows a long private hall shaped like an inverted T with the living-room at one end of the crossbar and the dining-room at the other, but a toilet at the intersection. As one enters this apartment the first view is that of the bathroom. Now this plan conforms to the minor details of the law, but violates the rules of common sense. To a greater or less extent this plans shows the faults of the great majority of these apartments.

Generally speaking, the fundamental cause of such poor planning is due to an old fallacy of attempting to serve too many apartments on the same floor with one means of vertical circulation. Instead of having two or three public stairs, one was built, for this seemed to save money. But when one stair hall serves more than four apartments per floor, a great deal of rentable space is lost in long, narrow, and ugly private halls that are necessary to give communi-

cation with the public hall. Fortunately this old mistake is recognized to-day by the best designers, and more public stairs are put in the plans than formerly. This, too, simplifies the location of fire-escapes and permits of the division of the plan into fireproof segments separated by 8-inch fire walls.

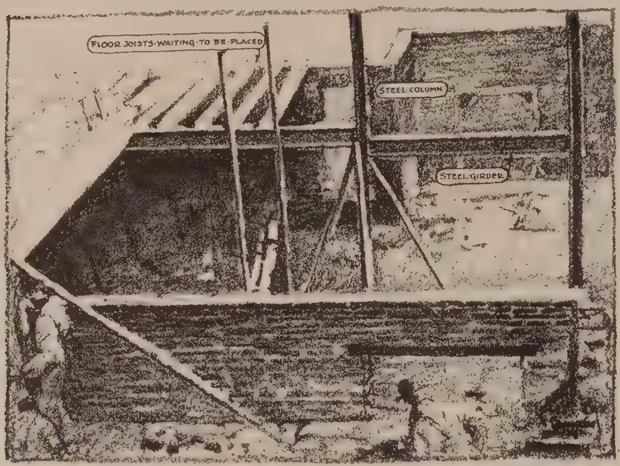


FIGURE 2.

Now in preparing the plans of any apartment, it is quite necessary to have a working knowledge of details, both of law, custom, and construction, but general principles cannot be neglected, and, after all, most of the laws are the result of an attempt to enforce certain general principles. These laws can be classified into three main divisions: those having to do with light and ventilation, those governing structural conditions, and those dealing with sanitary equipment, such as plumbing systems and fixtures. Many designers feel that these laws, which are applied to tenements, are too restrictive and complicated, and require too much attention to master. Now there is no better way of keeping within the law than to understand the motives that prompted it. To slavishly follow the details the designer will find himself cramped; but to know the principles which created the law gives freedom.

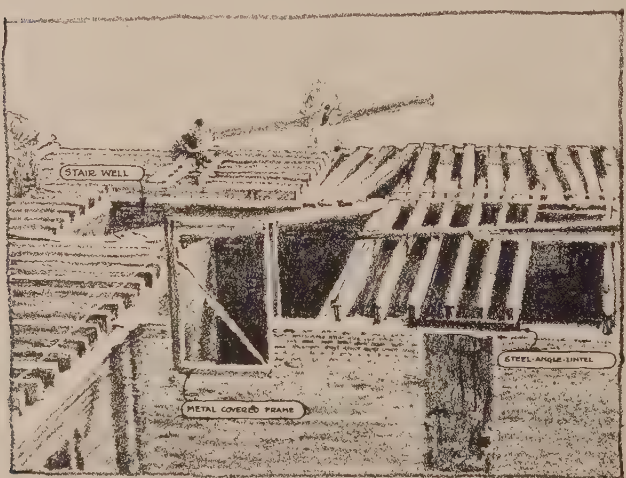


FIGURE 3.

In previous articles we have explained those principles of the laws which govern construction and fire precautions of non-fireproof apartments. It would be well to sum them up into a brief form, and so we have prepared the following outline:

Principles Underlying the Construction of Non-Fireproof Apartments

1. *They should be slow-burning.*
   (*a*) Exterior walls are built of masonry.
   (*b*) Floor over the cellar is made fireproof.
   (*c*) Wooden floor joists are made thick—3 inches—to burn slower.
   (*d*) Fire-stops are added at each floor level in interior partitions and around the ends of floor joists in exterior walls.
   (*e*) Fire walls extending from basement to above the roof are used to divide building into small units.
   (*f*) All vertical shafts, as stair wells and dumbwaiters, are made fireproof, and do not connect with the cellar or various floors except through fire-resisting doors.
   (*g*) Wood is kept at least two inches away from chimneys.

2. *A fire should not cause unnecessary collapse of building.*
   (*a*) All joists should have fire-cuts at their bearing ends to permit of quick release without overturning walls.

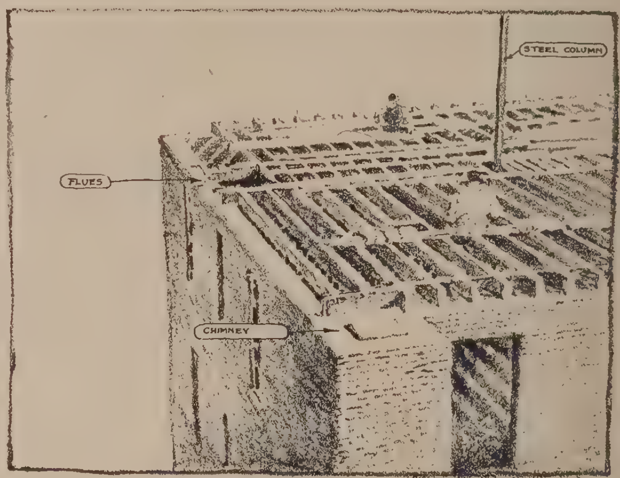


FIGURE 4.

   (*b*) Walls should be of ample thickness not to overturn under the expansion from the heat of a fire.
   (*c*) Height should be limited, preferably three stories, but usually five.
   (*d*) Interior bearing partitions of wood are prohibited, and the interior ends of floor joists must be supported upon brick bearing walls or steel girders and columns.
   (*e*) Plain glass is placed in skylights over stairs and dumbwaiter shafts to allow it to be shattered in a fire, permitting the escape of smoke, but protecting wire is placed above and below.
   (*f*) Wire-glass is placed in windows of stair halls.

3. *Safe exits for tenants should be arranged.*
   (*a*) Every apartment should have at least two means of escape, the main stairway and some secondary stairway.
   (*b*) Main stairway should be fireproof and be confined within a fireproof well, starting from first floor and extending up and through the roof, and all halls connecting with it should be fireproof, and all doors into it self-closing, fire-resisting doors.

(c) The secondary means of escape ought to be a smoke-proof tower or outside exit stairway instead of the usual fire-escape, or the so-called fire-tower.

Light and Ventilation Laws

If we examine the laws that have to do with the light and ventilation of tenements, we will notice that common sense in planning will not be out of accord with them. Every one knows that some restrictions upon the heights to which apartments can be carried must be made in order to save light and sunshine in the streets and courts. Besides a limit must be placed upon the height of non-fireproof tenements for safety against fire. The maximum height is generally restricted to one and a half times the width of the street, and not more than five stories for non-fireproof dwellings.

Another very simple arrangement is insisted upon by the law, and that is to keep an open channel for light and air down through the middle of the block. Restrictions on the depth of back yards keep this space open. The accumulated areas of all the back yards ought to make a reasonable open space. The law in this respect places a minimum on the size of this rear yard. A development, including a whole block, could wisely use more open area in sections of the city that are not too densely populated.

In addition to maintaining an open yard at the rear, it is reasonable to expect that this should be made wider as the buildings are built higher, and so the law places a minimum on the width of back yards according to the height.

And, too, when laws govern the width of courts, a minimum is established, and then the width must be increased over this as the height of the building increases. Offsets in these courts must be limited in depth, or else they will become narrow courts themselves.

With these general principles in mind it is not hard to prepare plans that check up with the technical details of the law.

Next to laws governing courts and their widths, yards and area of ground to be covered, come laws which govern the minimum sizes of rooms and window area. The window area must at least be one-tenth the floor area of the room, and placed high enough (7 feet 6 inches above the floor) to insure good ventilation. Transoms over the tops of interior doors are also needed in certain cases to give cross circulation of air. The law specifies the minimum size of rooms and height of ceilings; but a good planner would make the rooms larger than the minimum. The clear height from floor to ceiling required by law is 9 feet, and this is generally the standard. Sometimes the minimum size of rooms as required by law is made the standard (one room 120 square feet, and all others at least 70 square feet, and no room less than 7 feet in width, except in large high-class apartments servant rooms are permitted to be as narrow as 6 feet).

Proper ventilation of the public halls is also necessary. A window 2½ feet by 5 feet at least should be placed in every such hall, and if too long (over 60 feet) two or more windows are required. The ventilation of public halls is quite important, for the smell of cooking and other odors permeate the air very easily. Stair halls need to have one window at every landing, and a ventilating skylight at the top.

When janitor's apartments are placed in the basement, it is necessary for the health of his family that the windows be placed far enough above the grade, and also the ceiling, to give these quarters good light and air (4 feet 6 inches above the curb or, when open entirely on court at rear, 2 feet 9 inches above the curb at front of building). The foundation walls and floors ought also to be made waterproof.

In addition to a knowledge of the details of the principles of securing light and air, the designer needs to know certain common dimensions which he will need in the preparations of his working plans. The following table will be found very useful in this respect.

Non-Fireproof Walk-Up Apartments

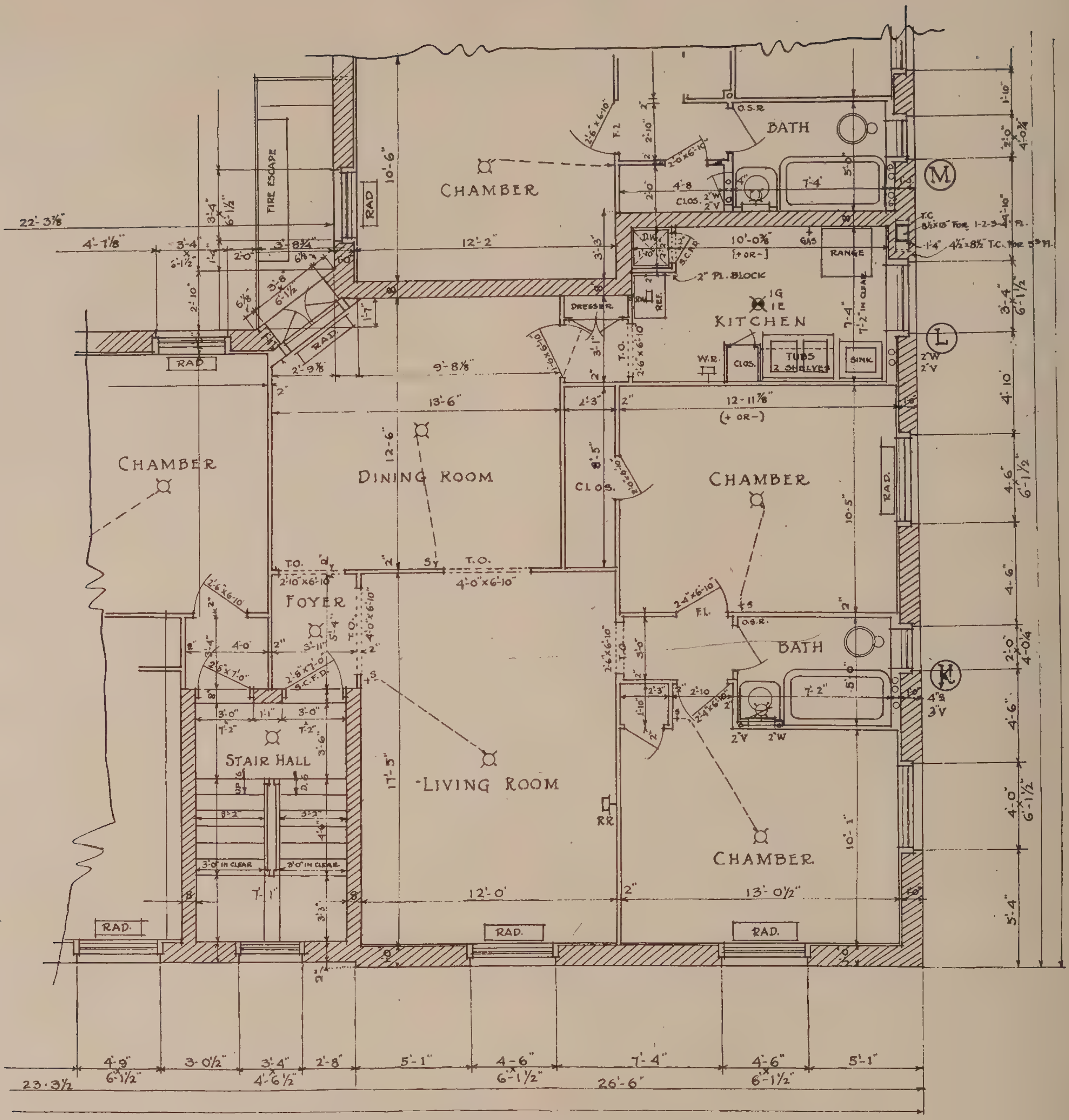
SIZES OF PARTS FOR QUARTER-SCALE WORKING DRAWINGS

1. Exterior brick walls are shown 12 inches thick, with an additional line on the interior to represent 2 inches of furring and lath and plaster.
2. Interior walls around stair wells are shown 8 inches thick, with no double line for lath and plaster.
3. Interior fire walls and bearing walls are also shown 8 inches thick.
4. Wooden partitions between rooms are shown 2 inches thick, as the rough dimension, although they are actually 4 inches thick when covered with plaster on both sides.
5. Where pipes are carried down in partitions they are shown 4 inches thick, although they are actually 6 inches when plastered.
6. Self-closing fireproof doors from stair hall to apartments are made 2 feet 8 inches by 7 feet.
7. Average door in bedrooms and kitchen is made 2 feet 4 inches to 2 feet 6 inches in width, and 6 feet 10 inches high.
8. Average door into closets is 2 feet by 6 feet 10 inches.
9. The above is also the size of door into toilets.
10. The average size of windows is as follows:

Bedrooms	4 feet by 6 feet
Toilets	2 feet by 4 feet
Kitchen	3 feet 4 inches by 6 feet
Living-rooms and dining-rooms,	3 feet 8 inches to 4 feet by 6 feet

These sizes are the masonry openings; the actual size between stop beads is 5 inches less in breadth and length.

11. Size of toilets is usually 5 feet by 7 feet 4 inches, with bathtub 2 feet 6 inches by 5 feet, and lavatory 2 feet by 2 feet.
12. Kitchens are about 74 square feet, and have in them a gas-stove 2 feet 3 inches by 2 feet 6 inches connected with a vent-flue 8½ inches by 13 inches for the first, second, and third floors, and 8½ inches by 8½ inches for the fourth and fifth. Sinks are indicated on the plans as 1 foot 10 inches by 2 feet, and double tubs 2 feet 4 inches by 2 feet, and refrigerators 1 foot 6 inches by 2 feet. Dressers are shown 14 inches deep, and dumbwaiters 2 feet by 1 foot 10 inches inside dimensions.
13. Dining-rooms are made 12 feet by 12 feet, or about 144 square feet area.
14. Dining-rooms and living-rooms combined, or just living-rooms, are made about 150 to 200 square feet area.

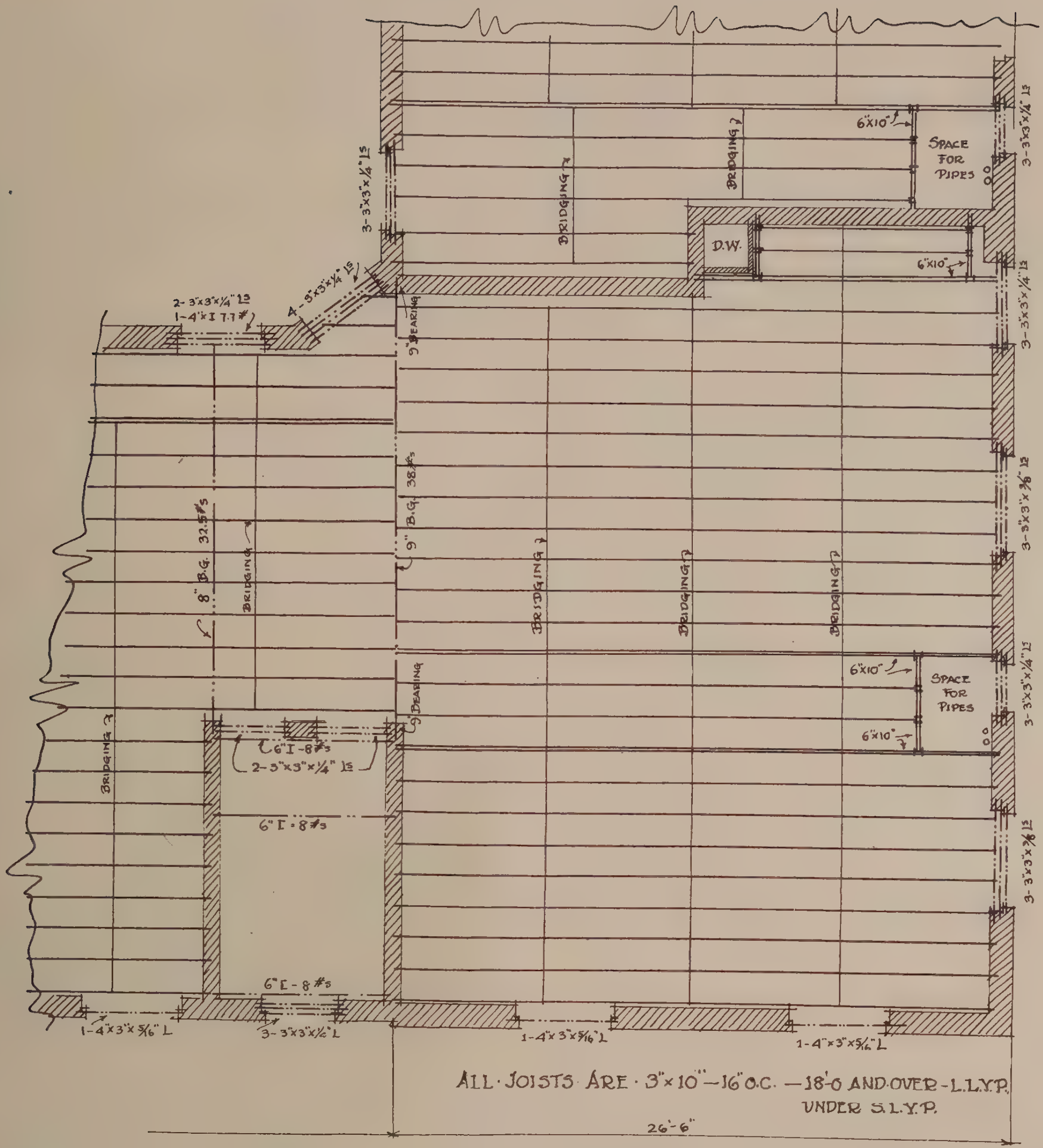


~ PART·OF·PLAN·OF·AN·APARTMENT HOUSE; SHOWING ~
~ INDICATIONS·USED·ON·QUARTER·SCALE·DRAWINGS ~
~ PLANS·BY ANDREW·J·THOMAS, ARCH'T. ~

15. Width of stairs in clear is 3 feet, and total width of hall with double stairway is 7 feet 1 inch.
16. Partitions in back of gas ranges are brick-filled.
17. The average boiler flue is 27 inches in diameter, with 8 inches of brick around it.
18. Service doors in basement are made 3 feet by 7 feet.
19. Service doors into store-rooms 3 feet by 6 feet 10 inches.
20. Basement partitions are shown as 2 inches thick, being made of fireproof blocks.
21. Steam-pipe ducts are made 3 feet by 2 feet 6 inches.

In addition to the above table of sizes we have shown some general sketches of apartment-houses in the process of construction. Attention is called on them to critical parts by special notes.

Besides these drawings we have reproduced parts of the working or quarter-scale drawings of an apartment-house designed by Andrew J. Thomas, architect. These show the methods of indications, dimensioning, and other details of importance.



~FLOOR·FRAMING·OF SAME·PART·OF·PLAN~
~SHOWN IN·OTHER CUT~

We hope that with these illustrations, this brief summary, and the details discussed in the previous articles the reader will have before him sufficient information to aid him in preparing the construction plans of apartment-houses of ordinary construction.

The problem of heating and plumbing will be considered later on, but before we tackle this subject we will turn our attention in the next few articles to the construction of fireproof apartments.

(*To be continued*)

American Buildings Withstand Japanese Earthquake

AMERICAN steel concrete buildings in Tokyo and Yokohama withstood the earthquake shock and are in good condition, according to a cable from Assistant Trade Commissioner G. C. Howard at Kobe. Officials of the Department of Commerce expressed gratification over the first practical demonstration of the effectiveness of the new so-called earthquake-proof factories and office buildings which have been constructed within the past three years. There are about six of these buildings in Tokyo. The fact that this construction has proven earthquake-proof is likely to influence favorably the adoption of this type of construction in the future.

Book Reviews

THE GEORGIAN PERIOD. Historical Papers, Photographs and Measured Drawings of Colonial or XVIII Century Architecture in the United States, with Reference to Earlier Provincial and True Colonial Work. Revised Edition. By WILLIAM ROTCH WARE. Six volumes, one text bound cloth and paper, five portfolios, 10 x 14 inches, 272 pages of text with 500 illustrations, 454 full-page plates. New York: U. P. C. Book Company, Inc.

This is in truth a monumental work, a designation that too often is applied to things that are little deserving the name.

But to gather from many sources the best of our Colonial work and to present it with the authority and co-operation of many qualified architects, is to have performed a work for late generations that becomes an invaluable reference, so many of the old houses have gone and are passing every day, in these days of expediency and disregard of the past.

The old edition lacked somewhat in the arrangement of the material, and there was needless diffuseness in the text matter. In the new edition the original matter has been carefully gone over and arranged for ready reference.

It has been rearranged and divided into six parts. Part I contains complete indexes and all text matter. Portfolios II to VI contain 454 plates consisting of detailed and measured drawings and photographic reproductions.

The plates are arranged under the headings of Houses, Churches, and Public Buildings. These in turn are grouped according to location. For example, Part II contains plates of houses in Maine, New Hampshire, and Massachusetts, grouped under these geographical subdivisions. Churches and Public Buildings are also arranged according to location. Thus it is an easy matter, with the help of the complete indexes, to locate any particular subject desired.

It has been the aim of the publishers throughout the revision to follow closely in the footsteps of the distinguished editor of the original work, Mr. William Rotch Ware, and to present a work that will justify its continuance as an invaluable part of the architect's library.

Since its first publication an entirely new group of younger men in the profession have come to the front, and no doubt there are offices all over the country that are without this adequate reference on the most interesting period of our architectural history. To these and to many of the older men this new edition will be most welcome.

The period will ever be a source of inspiration in the designing and building of residences, and we hope that more practitioners will see the light to be found in such a work as this, and carry on traditions that have the approval of long usage and good taste.

ARCHITECTURE TOSCANE. By GRANDJEAN DE MONTIGNY and A. FAMIN. Reprinted with a preface and description of plates by JOHN V. VAN PELT, F. A. I. A., A. D. G. F. The Pencil Point Press, New York.

This valuable work is now made available for members of the profession and for students in a handsome volume.

This is Volume I in the Architectural Document Series and contains the full 110 plates of the original edition, an index in English as well as in French, and an introduction in English in place of the introduction of the French edition. In these plates are represented works of Brunelleschi, Ammanati, Vasari, Giuliano da San Gallo, Antonio da San Gallo, Alberti, Falconieri, Michelozzo, Grosso, Settignano, and many other architects and sculptors.

Among the palaces represented are: Pitti, Riccardi, Strozzi, Gondi, Bartolini, Guadagni, Ruccelai, Ugiccioni, Giugni, Gherardesca; among the ecclesiastical buildings are the Church of St. Magdeleine, Church of the St. Esprit, and the Convent of the Augustinians, Chapel of the Pazzi, St. Mary of the Flowers in Florence. There are also several of the more interesting old market buildings and of other structures.

The plates are beautifully drawn and engraved and are reproduced by a photographic process with the utmost care to insure faithfulness to the originals.

CONSTRUCTIVE COVER DESIGNING. A Book of Seventy-six Original Designs Reproduced in Color on Sunburst Cover Paper with Introduction. By FRANK RANDOLPH SOUTHARD. Hampden Glazed Paper and Card Co., Holyoke, Mass.

This handsome book is the result of a cover-design contest in which more than thirty-five hundred artists took part. There was a first prize of a thousand dollars and additional prizes of smaller amounts. From the many designs submitted three hundred were selected and exhibited in various parts of this country and Canada.

It was a happy thought to bind in a volume the seventy-six designs shown, for it puts an interesting and suggestive collection into the hands of many artists and editors and others who will appreciate its reference value. Many of the designs are out of the ordinary, and some of them both original in conception and notably suitable. Printed on different colored papers selected with a view to effective and harmonious contrast with the printing-inks used, the result in many cases is in good taste and at the same time effective from a purely commercial point of view.

It is surprising to see how effective the background of the paper can be made to serve as an essential part of the decorative scheme. Some of our readers may remember how skilfully the late F. Hopkinson Smith used the surface of a brown or gray paper in some of his charming charcoal drawings.

THE WATERPROOFING HANDBOOK

The sixth edition of "The Waterproofing Handbook," published by the General Fireproofing Company, Youngstown, Ohio, is now ready for distribution to architects, engineers, and contractors who have waterproofing problems to meet.

This is a reference book, 8½ x 11, 72 pages, conveniently arranged for the quick location of the answer to any waterproofing problem.

The book is subdivided into four distinct parts, each section dealing with related problems of waterproofing. Section I, Sub-Structural Waterproofing, deals with the waterproofing of foundations, basements, pits, tanks, pools and containers and other structures subjected to hydrostatic pressure and dampness. Section II, Super-Structural Waterproofing, gives the methods and materials necessary for rendering walls and roofs proof against weathering and dampness, for the stain-proofing of cut stone and for the preservation of stucco, brick and concrete walls. Section III, Cement and Wood Floor Preservation, describes the different methods for hardening, dustproofing cement and wood floors, and for accelerating the setting of cement floors. Section IV, Technical Paints and Coatings, deals with the different ways of rendering walls, floors and containers proof against acids and oils; for the protection of structural steel and galvanized surfaces from rust and timbers from dry rot and decay; for bonding new concrete to old, etc.

Complete specifications are given for all problems and the book is so completely indexed that the location of any problem or specification is a matter of seconds.

The book is for free distribution to architects, engineers, and contractors who are confronted with waterproofing or damp-proofing problems.

ESTIMATING BUILDING COSTS. By CHARLES F. DINGMAN. McGraw-Hill Book Company, Inc., 370 Seventh Avenue, New York.

A practical guide on estimating building-construction costs. Based on fifteen years' experience. Covering all operations from excavating to roofing and waterproofing. Showing how to analyze every construction job into its component parts. Explaining how to apply cost data adjusted to existing conditions to the several necessary operations and how to calculate a price that will approach the actual cost of doing the work as closely as is humanly possible.

Chapter headings: "Introduction," "Excavating, Grading, Bracing," "Brickwork," "Stone Work," "Fireproofing," "Concrete," "Timber Framing," "Boarding, Planking," "Shingling," "Finished Carpenter Work," "Structural Steel and Iron Work," "Lathing, Plastering, and Stucco Work," "Painting and Paper Hanging," "Roofing and Sheet Metal," "Short-Cut Methods," "Summary."

SITE PLANNING IN PRACTICE. An Investigation of the Principles of Housing-Estate Developments. By F. LONGSTRETH THOMPSON, B. Sc. (Eng., Lond.). With a foreword by RAYMOND UNWIN, F. R. I. B. A. Oxford University Press, American Branch.

"Housing Policy and Urban Development," "The Preliminary Survey," "The Choice of Site," "The Development Plan: Preliminary Considerations," "The Development Plan: Classification and Design of Roads," "The Development Plan: The Arrangement of the Roads," "Water Supply and Drainage," "Open Spaces, Gardens, and Allotments," "The Disposition of the Buildings," "Conclusion," "Index." Very fully illustrated, with numerous plans and photographs.

A Correction—Not Indiana Limestone

In the September number it was stated that the exterior of the Passaic National Bank building was of variegated limestone. It seems that it was the original intention to use the variegated Indiana limestone, but the plans were later changed and an artifical stone was used.

Drafting-Room Mathematics

By DeWitt Clinton Pond, M.A.

TWELFTH ARTICLE

CALCULATIONS which involve not only the characteristic considerations of the usual set-back problem but which also require the solving of an unusual algebraic expression were part of a problem which was presented to an architect when he was designing a building in which the upper floors were to be used for dormitory purposes. In

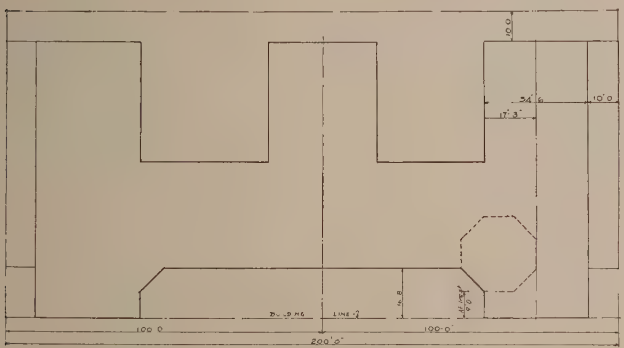


FIGURE 46

the design of a building of this type the upper floors have to be planned first, and the plan which provides the greatest number of rooms, with the smallest number of dark corners at the intersection of corridors, is the one which will influence the plans of all the other floors. In Fig. 46 is shown the outline of the typical floor plan, which is designed in the form of a large letter *E*. The wings in which the rooms are located are all 34 feet 6 inches wide—which is the average width for most hotel wings.

There were several things to be considered in the design of this plan. Not only must the street wall set back in accordance with the usual requirements of the Building Zone Resolution but the rear yard and courts must increase in depth or width as the building is made higher. It was desirable to have the building which is now under consideration thirteen stories high. All the bedroom stories were made 10 feet from finished floor to finished floor and the first story, second story, and third story were made 13 feet 9 inches, 13 feet, and 12 feet 9 inches high respectively. It was found that the curb level could be taken as 9 inches below the finished first floor. The street on which the building faces is a 60-foot street, the district is a one and one-half times district, a residence and a "B" district. All of these facts must be known before the design of a building in New York can be undertaken.

As the street is a 60-foot street, and as the district is a one and one-half times district, the height limit is 90 feet. It will be seen, in Fig. 47, that the set-back line cuts the building line at the beam level of the ninth floor. Therefore the main wing of the typical bedroom floor plan must be set back if it is desirable to design the building so that it will be 13 stories high. As all the typical stories are 10 feet high there will be an additional fifty feet in height above the ninth floor, as shown in the figure. According to the Resolution, "for each one foot that the building, or a portion of it, sets back from the street line three feet shall be added to the height limit of such building or such portion thereof."

This statement might be made in a somewhat different manner to the effect that for every three feet that it is required to add to the height of the building above the height limit the street wall must be set back one foot. It is desirable to add 50 feet to the height, and so the street wall must be set back one-third of this distance, or 16 feet 8 inches.

So far the calculations are simple enough. It will be seen that the main wing of the building must be set back from the building line in accordance with the calculations given above. However, the architect is allowed to take advantage of the height district exception as stated in paragraph *c* in section 9. He is allowed to carry up a part of the end wings on the building line to a height which must be determined by the following calculations. The frontage, on the street, of the lower parts of the building

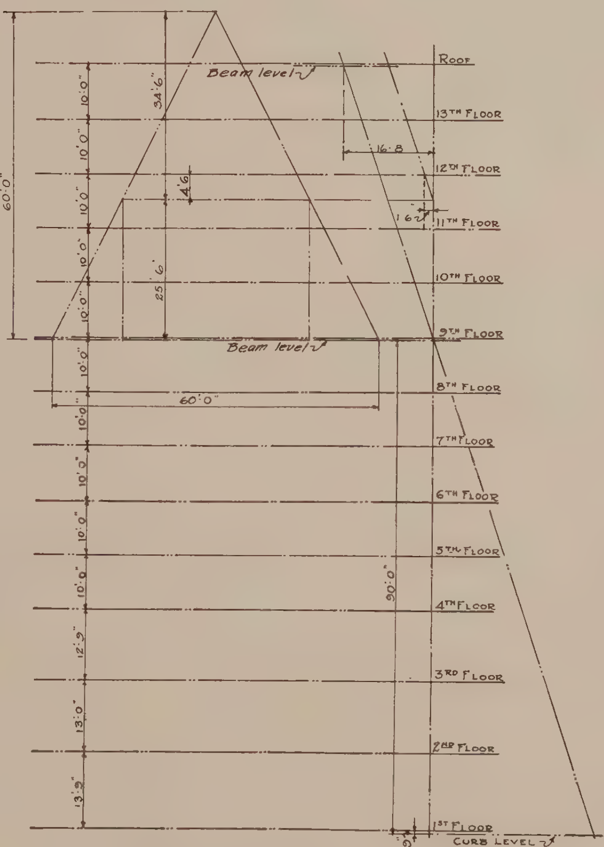


FIGURE 47

extends from lot line to lot line and measures 200 feet. To find the height that each wing can be carried up, this frontage can be divided into halves of 100 feet each and 60 per cent of this dimension is 60 feet. This is the length of the base of the triangle which is drawn in accordance with the explanation given in the last article of this series, to which the reader should refer.

The altitude of the triangle is also 60 feet, a height common to all such triangles, and as the wing measures 34 feet 6 inches in width it will be necessary to find how high such a width can be carried up within the triangle. This is done by proportion.

$$34.5:60 = x:60$$
$$60 \times 34.5 = x \times 60$$
$$34.5 = x$$
$$60 - 34.5 = 25.5$$

The height to which the end wings may be carried on the building line is 25 feet 6 inches. As the story heights each measure 10 feet, the wings can be carried up two more stories above the height limit. This is shown in Fig. 48.

In accordance with the architectural design it is thought to be desirable to carry the wings 11 stories high, so it will be necessary to set the wall back, and the following calculations are required to determine for just what distance it will be necessary to do this.

It will be seen by referring to Fig. 47 that the theoretical height to which the wing can be carried is 25 feet 6 inches. The distance between the beam level at the ninth floor and the same level at the twelfth floor is 30 feet, or 4 feet 6 inches more than is allowed. For this height the rule quoted above applies and it is required that this height be divided by 3 in order to find the dimension between the street wall of the eleventh story and the building line. This distance can be found to be 1 foot 6 inches.

So far all the calculations have been found to be very simple. For street frontages measuring 100 feet this is usually the case. However, there is another consideration which adds an interesting question to the calculations.

It will be noticed, by referring to Fig. 46, that there is an octagon indicated by dotted lines at the intersection of the wings. This represents the outline of a penthouse which the architect desires to erect at this intersection. One line of this octagon forms the wall line, which is drawn at an angle of 45 degrees at the intersection. It is desirable that there should be space for one bedroom between the building line and the intersection of the wing and the 45-degree line. It is therefore necessary to know not only the length of the line but its horizontal projection in order to find whether it will be possible to have room for the bedroom, which should be 9 feet wide.

In Fig. 48 the octagon is shown and the known dimensions are indicated. Two sides of the octagon are supposed to be directly over the centre of each wing. Therefore it is possible to see where the dimensions given as 17 feet 3 inches are obtained. The required horizontal—or vertical—projection is noted as x. The length of one side of the octagon is noted as y, and it can be seen that $2x^2$ must equal y^2. The sum of the squares of two legs of a right triangle equals the square of the hypothenuse.

It is obvious that $17.25 - x = y$ and that $(17.25 - x)^2 = y^2$ and as y^2 equals $2x^2$ it is possible to write the expression given below:

$$(17.25 - x) \times (17.25 - x) = 2x^2$$

In this equation there is only one unknown quantity, and this is x.

As nothing has been said in previous articles with regard to multiplying algebraic expressions it might be advantageous to give the calculations necessary for squaring the expression $(17.25 - x)$ in full. For those who know that $(x - y)^2 = x^2 - 2xy + y^2$ this will not be necessary.

$$\begin{array}{r} 17.25 - x \\ \times\ 17.25 - x \\ \hline - 17.25x + x^2 \\ 297.562 - 17.25x \\ \hline 297.562 - 34.50x + x^2 \end{array}$$

For those who are not accustomed to multiplying such expressions an explanation might not be out of place. It will be seen that the upper expression was multiplied first by $-x$ of the lower one and then by 17.25. The two results are then added.

The result found in the manner outlined above can be equated with $2x^2$ and the following equation can be written:

$$297.562 - 34.5x + x^2 = 2x^2$$

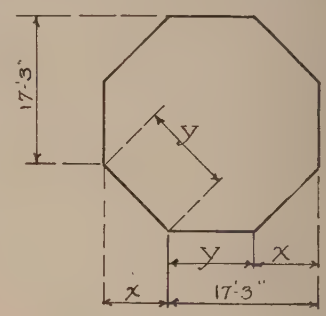


FIGURE 48

By transposing all the expressions in which x can be found to the right of this equation the following result is obtained:

$$297.562 = 34.5x + x^2$$

In order to find the value of x it will be necessary to do a little mathematical juggling. It is, of course, possible to add to both sides of the equation equal amounts and in this case it will be necessary to add 297.562 to each side with the result that the following equation can be written:

$$595.124 = 297.562 + 34.5x + x^2$$

The algebraic expression at the right of this equation is a perfect square, as can be determined by multiplying $x + 17.25$ by itself. Because of this it is possible to extract the square root of both quantities at the left and right of the equation. The square root of 595.124 can be obtained in the ordinary arithmetical manner, or by logarithms, as has been explained in previous articles. This method will be given below:

$$\log 595.124 = 2.77461$$
$$2.77461 \div 2 = 1.38730$$
$$1.38730 = \log 24.395$$

By extracting the square root of the expressions in the equation the following result is obtained:

$$24.395 = (17.25 + x)$$
$$x = 24.395 - 17.25 = 7.145$$
$$x = 7 \text{ feet } 1\tfrac{3}{4} \text{ inches.}$$

As has been stated, it is necessary to have 9 feet between the point of intersection of the side of the octagon with the side of the wing and the building line. By adding 7 feet $1\frac{3}{4}$ inches to 9 feet it will be found that the total distance of 16 feet $1\frac{3}{4}$ inches is slightly less than that required by the Zone Resolution and so the requirements of the Building Zone Resolution will govern the set back.

Before going on to explain the other considerations involved in designing a building for a B district, it might be necessary to explain why the number 297.562 was obtained and why it was added to each expression. The process is one used in solving certain quadratic equations

and consists of dividing the coefficient of x — (in this case 34.5 —) by 2 and of finding the square of this number and adding this to each side of the equation. In this manner a perfect square is obtained for one expression of the equation, and this can be reduced to an expression in which there is simply x and a number. From this x is not difficult to find.

The required set back for the main dormitory wing of the building has been found. The height to which the end wings of the plan can be carried up on the building line and the set back required in case it is desirable to carry up the wing another story have also been determined. All of the calculations, which have been carried out, apply, however, only to the street elevation of the building. The Zoning Resolution also requires set backs for walls on courts, rear and side yards. There are, for example, the following statements in section 12 of Article IV of the Resolution: "In a B district a rear yard at any given height shall be at least two inches in least dimension for each one foot of such height. The depth of a rear yard at its lowest level shall be at least 10 per cent of the depth of the lot, but need not exceed 10 feet at such level. An outer court or a side yard at any given height shall be at least one inch in least dimension for each one foot of height."

Among the definitions in Article I are the following:

"A rear yard is an open unoccupied space on the same lot with a building between the rear line of the building and the rear line of the lot.

"The depth of a rear yard is the mean distance between the rear line of the building and the rear line of the lot.

"A court is an open unoccupied space, other than a rear yard, on the same lot with a building. A court not extending to the street or to a rear yard is an inner court. A court extending to the street or rear yard is an outer court. A court on the lot line extending through from the street to a rear yard or another street is a side yard.

"The height of a yard or court at any given level shall be measured from the lowest level of such yard or court as actually constructed or from the curb level, if higher, to such level. The highest level of any given wall bounding a court or yard shall be deemed to be the mean height of such wall."

It is well to bear the exact meaning of these definitions in mind, for it will be seen that in measuring heights of walls bounding courts or yards according to the wording of the resolution no allowance is made for a parapet wall and the distance must be measured to the top of the wall itself and not to the top of the beams.

In the plan shown in Fig. 46 is a side yard 10 feet wide. This width is large enough for a height of side wall of 120 feet. As the building under consideration is to be 13 stories high it will be carried to a height of 140 feet to the roof beams over the thirteenth floor. The side wall must be set back above the eleventh story, and as the roof in this case is a sloping roof with no parapet, it will be necessary to set the side wall back 1 foot 8 inches.

The set-back line for the rear yard has a greater pitch than does the set-back line for the side yard. In order to draw it it is necessary to establish a horizontal distance of 10 feet and a vertical distance of 60 feet. A line drawn between two points established on horizontal and vertical ordinates will give the limits within which the rear wall of the building must be built. It will be seen, if such a line is drawn, that the rear wings must be set back above the fifth story.

Professor of Architectural Design at Carnegie

CAMILLE E. GRAPIN, a distinguished architect of France, has been appointed Professor of Architectural Design at Carnegie Institute of Technology for the coming year, according to an announcement from President Thomas S. Baker. Mr. Grapin's appointment is in line with the announced policy of the Pittsburgh institution to secure for its faculty men and women of the highest authority in their respective professions.

In Mr. Grapin Carnegie Tech is securing an artist whose unusual training qualifies him to assist in broadening the work covered in the Department of Architecture. He has repeatedly distinguished himself through his numerous accomplishments as a graduate student in the National School of Beaux Arts in Paris.

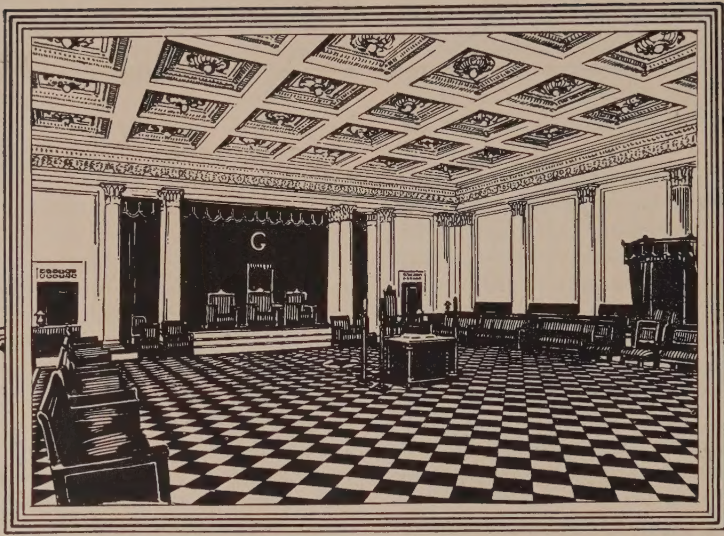
He was born in France in 1886, and was graduated from the National School of Beaux Arts in 1914, doing graduate work in the following years. While a student at the school he was awarded the Jean Leclere Prize, which is given to the student receiving the greatest number of medals and prizes at the school. For the year of 1919–1920 he was given the Equal Second Prize in the Detouches, Delages, and Roux Competition, one of the most important competitions in France.

Among other honors conferred upon Mr. Grapin were the Destors Prize, given to the student having the greatest number of values in problems, and the Chaplain Prize, which is given to the student winning the most values in design. Both of these awards were made by the Central Society of Architects in France. He has also been awarded a diploma by the French government to practice architecture.

Eliel Saarinen at the University of Michigan

THE College of Architecture of the University of Michigan is pleased to be able to announce that Mr. Eliel Saarinen, of Helsingfors, Finland, will be Visiting Professor in Architectural Design during 1923–24. He will criticise in advanced and graduate designing.

Mr. Saarinen, one of the leading architects of Europe, recently became better known in this country through his remarkable design submitted in the Chicago Tribune Building competition. To students of European architecture he has however long been known as an architect of unusual ability. In the international competition held in 1906 for the Peace Palace at The Hague his design was one of the noteworthy ones and is published in the volume devoted to this competition. It is interesting to note that his more recent work is marked by the same spirit. He has not only designed important buildings in his own country but, like so many European architects, has been active in the field of city planning.



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RUINS OF A CHURCH IN LOUDUN, FRANCE. From a drawing by Samuel Chamberlain.